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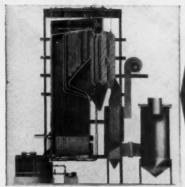
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P-766

1952 Review Number

PULP & PAPER

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Aids In Using This WORLD REVIEW

Here are some conversion factors it should help to know as you read or use this WORLD REVIEW Number of PULP & PAPER: A short ton equals 2,000 lbs.

A metric ton equals 2,204.6 lbs.

Multiply metric tons by 1.1023 to obtain short tons. Multiply short tons by .90718 to obtain metric tons.

A kilogram equals 2.2046 lbs. (there are 1,000 kilos in a metric ton; 2,000 lbs. in a short ton).

Multiply a kilogram by 2.205 to obtain pounds.

One cord equals 2.55 cubic meters (a meter equals 39.37 inches), or 90 cu. ft. of wood, not counting air space. But usually wood and air space are counted, which would be 128 cu, ft. or 3.62 cu. m.

A hectare equals 2,000 square meters, or 2.47 acres

Two cords are generally accepted as equal to 1,000 bd. ft. (but bd. ft. is the western measure for large logs and not cordwood). Some calculators figure 500 bd. ft. to a cord (we do) and others



PULP & PAPER circulates all over the world. It is read in virtually every pulp and paper company office and mill throughout the United States, Canada,

office and mill throughout the United States, Canada, Mexico, Alaska, Hawaii, the Philippines, Australia and New Zealand. It is read in many other offices and mills in Argentina, Brazil, Chile, Colombia, Cuba, Ecuador, Uruguay, Venezuela, England, Ireland, Scotland, Sweden, Norway, Finland, France, Germany, Austria, Belgium, Holland, Czechoslovakia, Italy, Spain, Switzerland, Soviet Russia, Poland, Yugoslavia, India, Pakistan, Israel, South Africa, China, Japan, Formosa, both near and far around the world, where pulp and paper are made.

600 bd. ft. Two cords or 1,000 bd. ft. have long been widely accepted as equivalent to one ton of chemical pulp, but with higher yield pulping, hydraulic barking, etc., this pulp yield probably runs a little higher.

For a Better Understanding

We considered it a small but courteous gesture to publish the following short commentary from a very fine contemporary French magazine. Because, for many of our readers in other lands, this other international language may be read more easily than English

We hope the information in this volume is of genuine interest to readers in this and other countries. For people who work and live in pulp and paper it must, and should, be of interest to know about their industry and "co-workers" in other lands. In this volume, we present pictures and facts and figures about the industry around the world, nation by nation.

We don't want to seem pompous-but maybe, in a small way, this volume will contribute to a better understanding among nations and peoples. At least we sincerely hope so

In this following French editorial, what is said about the essentiality of paper in the United States, may some day apply just as forcefully to other nations.

As Seen Through Old World Eyes

Excerpts from our contemporary publication-"Papier, Carton et Cellulose" of France. It tells in another international language some of the points emphasized in this WORLD REVIEW:

Une amusante publicité d'un magazine américain imagine l'Amérique privée de papier; l'embarras de Madame AMERIQUE au marché, achetant des produits dépourvus d'emballage, sans sacs en papier, sans boîtes de carton; la santé du pays risque d'être compromise, le niveau de vie abaissé; voici les méthodes de vente et de prospection des marchés paralysées, la force at la sécurité du pays menacées. - Situation d'ailleurs inconcevable. - Le papier est essentiel aux Américains, il protège la production américaine et conserve aux U.S.A. leur puissance.

En conclusion de ces quelques réflexions sur l'industrie mondiale des pâtes à papier, réflexions que le manque de place n'a pas permis de développer, il est curieux de noter la similitude des problèmes qui se posaient à la papeterie au siècle précédent

avec nos propres problèmes.

Vers la moitié du 19e siècle, en effet, devant l'accroissement de l'augmentation des besoins en papier, la papeterie dût faire face à des difficultés d'approvisionnement en matières premières telles que nous les connaissons actuellement. Le chiffon n'existant plus en quantité suffisante, c'est alors que fut entrepris l'utilisation des bois résineux.

Cette ressource devient maintenant insuffisante; imitons donc nos pères en entreprenant l'utilisation de nouvelles fibres.



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Review Number) are as follows: In the United States, Canada, Mexico and other Pan American Union nations—\$3 for one year or \$5 for 2 years. In other countries—\$4 for one year and \$7 for 2 years. Entered as second class matter Dec. 4, 1951, at postoffice, Bristol, Conn., under the Act of March 3, 1879. Postmaster: Please send Notice 3579 to PULP & PAPER, 71 Columbia St., Seattle 4, Wash.



Molten Sulphur flowing into the storage vat

Thousands of tons mined daily, but where does it all go?



ook around you in any grocery store and what do you see — canned goods of all kinds! Soups, vegetables, fruits, berries! Believe it or not, you're looking at merchandise that consumed a lot of Sulphur in the making.

Tin cans are made of tin plate. Tin plate is made of sheet steel. Sheet steel is made with the help of sulphuric acid—pickling, as they call it, the process that removes scale preparatory to plating. In 1951, the sheet division of our great iron and steel industry is estimated to have consumed 140,000 long tons of Sulphur in the form of sulphuric acid. That in itself makes quite a dent in our supplies of Sulphur. Add to this almost as much more for treating wire rod, plate, strip, bars, etc., and you can see that to make finished steel, regardless of form, the iron and steel industry must use lots of Sulphur in the form of sulphuric acid.

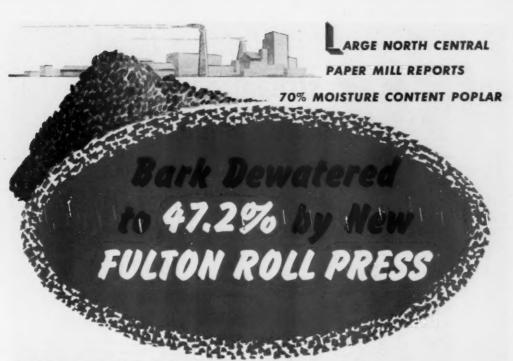
Right here is an excellent example of the interdependence of all of our industries. To produce steel requires a lot of Sulphur. To produce Sulphur and other mined products requires a lot of steel. This interdependence of industries is one of the country's sources of strength.

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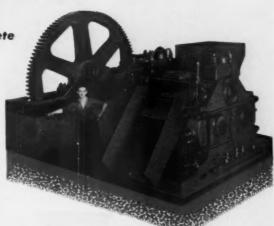
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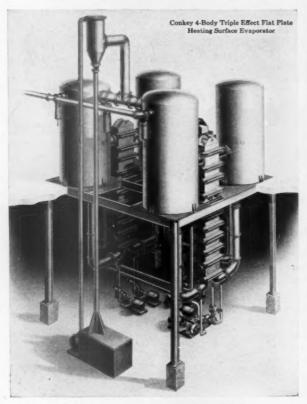
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*Patents Applied For

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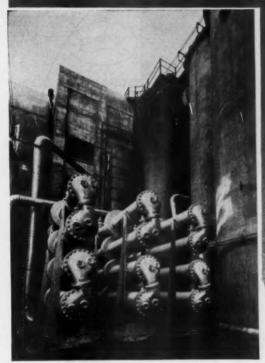
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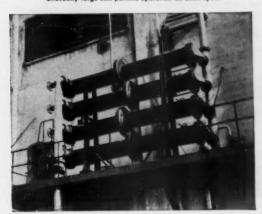
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ESCO 12-unit cooler with towers in magnesiumbase pulp mill at Longview, Washington.

Sulphite digester relief and blow-down cooler. Unusually large size permits operation on short cycle.



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Save Floor Space — Requires less area than other coolers of equal capacity.

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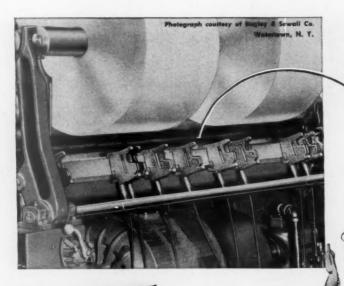
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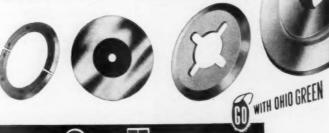
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FOR EXAMPLE ...

the woodyard



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Where seed trees and seedlings have been destroyed by forest fires, Weyerhaeuser Foresters must plant seedling trees. This is slow, hard and costly work, and fortunately less than 3% of Weyerhaeuser Tree Farm lands require hand planting.

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Use Larger Tanks and Specify Pacific-Western Reducers for the Agitator Drives

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The Pacific-Western unit has a ratio of 90 to 1 and was designed for operation with a 200 HP motor at 1750 RPM. The reducer has an output shaft 8" in diameter and a thrust capacity, up or down, of 45,000 pounds.

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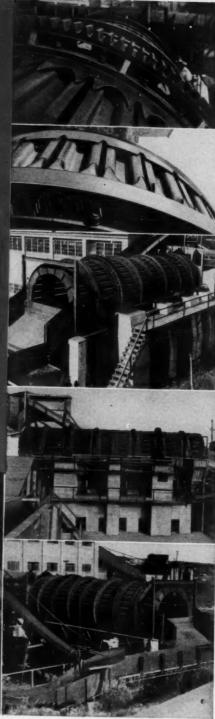


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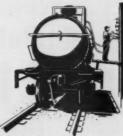
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- 214 What Do We Know About Bleaching?
- 236 Importance of pH and Catalysts in Bleaching Operations
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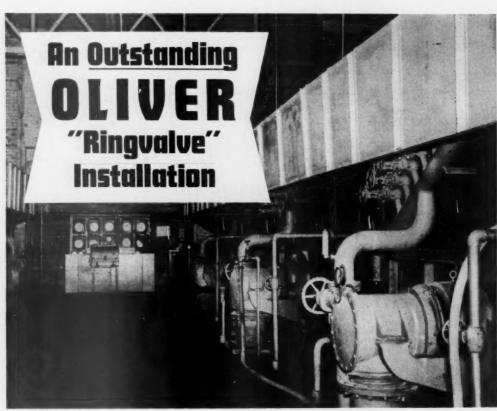
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You've guessed it. We're referring to the new, modern kraft brownstock wash room of the Brunswick Pulp & Paper Company. That Oliver Ringvale Washers were selected to be key equipment in this company's modernization program is, naturally, very gratifying.

Believing the management would be willing to have others in pulp and paper manufacturing go through this new wash room, we suggest that if you are in the neighborhood, drop in and see the Oliver Ringvalves at work. You will get an excellent picture of the efficient way these washers are serving your industry, particularly in the States and Canada.

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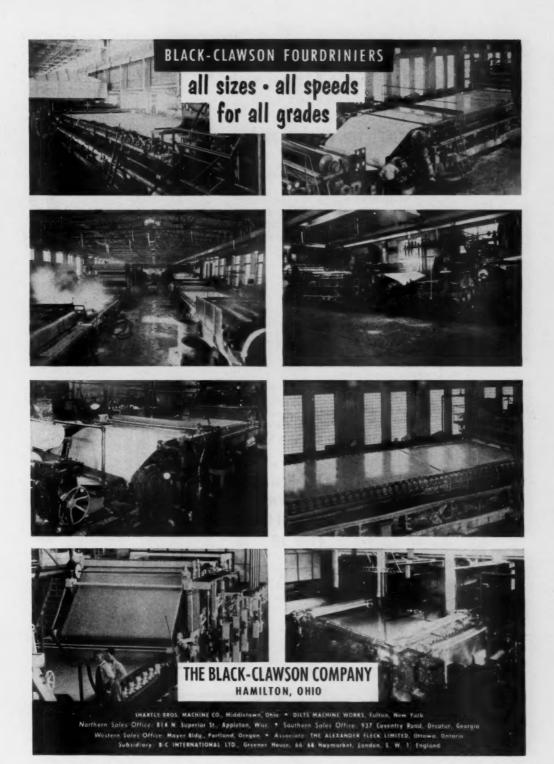
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3 new features

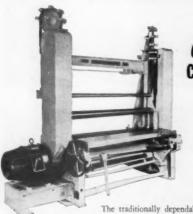
for improved roll quality and reduced maintenance cost

These three new design features of the Camachine Commander virtually eliminate vibration and provide for superior strip control:

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For complete details on the new Camachine Commander write for Bulletin 2000.

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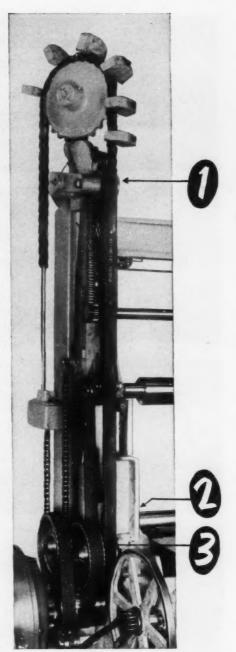
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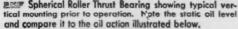
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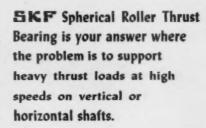
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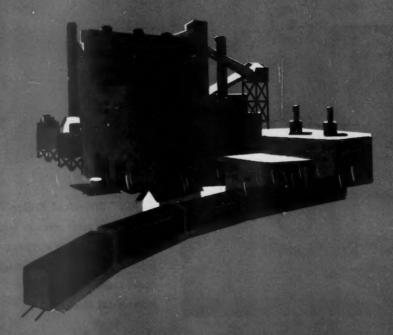


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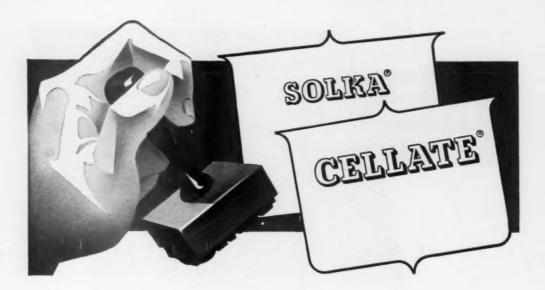
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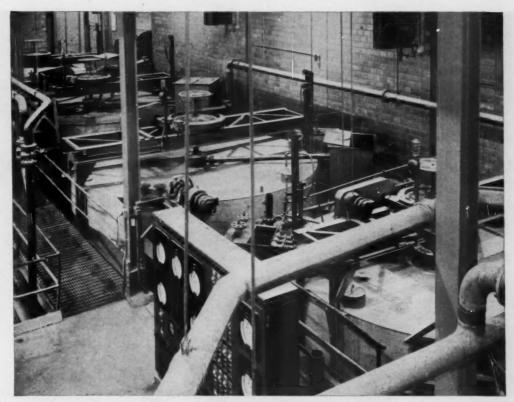


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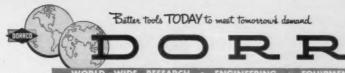
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This Industry's Future LOOKING AHEAD-THROUGH CHEMIST'S EYES

By John B. Calkin

Director, Dept. of Industrial Cooperation, University of Maine (An article especially prepared for this WORLD REVIEW NUMBER)

Trees are the greatest chemical and fabricating factories in the world. The photosynthesis of water, air and elements in the soil produce a very important industrial resource. Proper planning can increase rather than decrease this industrial resource. The only ceiling to the expansion of the pulp and paper industry is an adequate and sustained supply of pulpwood.

The Pulping Process

The composition of wood varies from species to species, but for purposes of this discussion we can consider wood to consist roughly of 30 percent lignin and 70 percent carbohydrates. This, of course, disregards extraneous components which may have considerable importance in some species but the oversimplification will serve our present purpose. During pulping operations only 45 to 50 percent of the wood is recoverable as "cellulose" and the remaining carbohydrates, together with the lignin, remain in solution in the cooking liquor.

In the alkaline pulping processes, soda and kraft, it has been the practice for many years to evaporate the black liquor and when a certain concentration has been attained to burn the concentrate for the recovery of the alkali chemicals used in the pulping. The advances in engineering practice have now made it possible to recover more efficiently the fuel value of the organic waste. Certainly one of the ways in which the industry can look ahead will be toward the elimination of the economic loss represented by the inefficient burning of the black liquor.

The disposal of spent sulfite liquor has presented an entirely different problem from that of the soda and kraft liquors. In most cases the liquor is prepared by reacting sulfur dioxide with lime to obtain calcium bisulfite in sulfurous acid solu-

The adverse effect of the spent sulfite liquor on the biochemical oxygen supply of the streams could be avoided if the fermentable carbohydrates were removed before the liquor was run into the stream. These carbohydrates can be fermented to produce ethyl alcohol and alcohol from this source is available.

By process changes using other varieties of yeast, notably Torulopsis utilis, and by maintaining a higher oxygen level during fermentation, the carbohydrates plus added nutrient salts can be transformed into yeast bodies which represent a highly concentrated form of protein and much desired as an animal feed, human food or for other uses.

Extensive experiments have been car-

JOHN B. CALKIN—who gives broad picture here of this industry's future "probables"—is a Chemical Consultant in New York; also Associate professor of C. E. at Univ. of Maine, as well as its Dept. of industrial Cooperation Chief.



ried out at Rhinelander, Wisconsin, on a small plant scale to determine the economic feasibility of this process. A thorough study of the economics of fodder yeast production from sulfite waste liquor has been carried out in the Northwest.

Another approach to the sulfite spent liquor problem lies in the selection of some other base than lime to combine with the sulfur dioxide in making up the cooking liquor. In this way the scaling that occurs during the evaporation of the calcium spent liquor can be avoided. Such a base is magnesium oxide and this is now being used in a mill on the West Coast. (Ed. note: At Longview, Wash., and by 1952, at Ketchekan, Alaska)

A sodium bisulfite cooking liquor for the pulping of wood is used by a plant in Sweden which recovers the sodium and the major part of the sulfur in a way similar to the recovery of the chemicals in the soda and kraft cooking processes. It is claimed not only that this process gives a very satisfactory pulp but that pinewood can be pulped in this way.

Ammonia as a Pulping Base

More recently ammonia has been used as a base in the sulfite process. (Ed note: By the end of 1952 there was expected to be 5 mills in the Pacific Northwest, 3 or 4 in Wisconsin and two in Maine using ammonia.) The cooking acid has a slightly higher pH than calcium base cooking acid and apparently causes less hydrolytic degradation and somewhat higher pulp vields. There is better penetration of the cooking acid and the solubility of the ammonium lignosulfonate tends to make the pulp easy to wash. Altogether the process is claimed to lead to the production of a superior pulp. The ammonium base sulfite spent liquor can be evaporated readily in corrosion resistant equipment and the calorific value of the organic material in the liquor can be recovered by burning the concentrate. Thus far little is known about the possibility of chemical recovery and the economics involved, but investigation will undoubtedly reveal possibilities in this direction. The process presents the possibility of using spray-dried liquor as a source of nitrogen for fertilizer and for concentrated waste liquor as a source of heat recovery.

It seems certain then that the relatively near future will see more and more units of the sulfite industry changing over to processes which avoid the pollution of streams and permit chemical and fuel recovery with resulting profit to themselves.

Some Chemical Pulps

There has been an increasing interest in semichemical pulps from softwoods and hardwoods using the sulfite and sulfate processes. Of considerable interest are the increased yields obtained and pulps can be so cooked that bleaching without excessive loss can be accomplished. Pulps are characterized by a high holocellulose content and thus hydrate more rapidly and develop maximum strength more quickly.

Relatively new chemicals in the bleaching of pulps are sodium peroxide for groundwood and chlorine dioxide for chemical pulps. Work is going forward to obtain pulps of higher brightness than previously without appreciable increased degradation of the cellulose.

Certain phosphates and non-ionic synthetic detergents, acting as dispersing agents, are being used in the washing of pulps, this is particularly true for high purity dissolving pulps. Some of the cationic softeners, used in the textile industry, are being used for softening paper.

Lignin-Industrial Raw Material

Except for the lignin in groundwood pulp, and for a small amount of lignin now converted to vanillin and plastics, the roughly 30 percent of wood which is lignin, amounting to 2,500,000 tons per year in the United States, is used in some processes as fuel, but the major portion is disposed of as waste with no economic value.

The tremendous quantities of lignin available, however, cause any serious person to ask whether there is not some better use for it than fuel. Can any use be found for the lignin itself or can it be transformed chemically into other products of value? Much work has been done in both directions.

Because lignin is such a weak acid it can be precipitated from the alkaline black liquors by saturating them with carbon dioxide and this procedure is followed in obtaining "thiolignin" and "soda lignin," which are now available on the market. It should be pointed out that the removal of the lignin still leaves a large

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combustible organic residue in the liquor and in no way affects the recoverability of the alkali chemicals. In both the kraft and soda processes, the recovery of the lignin is a flexible procedure whereby a portion or all of the black liquor can be diverted for lignin removal and then be returned for combustion and chemical recovery.

In the sulfite process there are two technically feasible ways of obtaining the lignin from the spent liquor in a solid state.

First, by using the so-called Howard process, the main portion of the lignosulfonic acid is precipitated as basic calcium lignosulfonate which is insoluble in water and from which a concentrated solution of calcium lignosulfonate or free lignosulfonic acid is obtained by decomposing the precipitate with the appropriate amount of sulfuric acid and removing the precipitated gypsum. It should be noted, that unless the spent liquor has been heated for some time under alkaline conditions, the carbohydrates contained in the spent liquor will still be present in the filtrate of the basic calcium salt and will still present a problem as regards steam pollution.

The second way in which the lignosulfonic acids, or more correctly, the total solids in the spent sulfite liquor are isolated is through the complete evaporation of the liquor and drying of the residue. It should be remembered, however, that the lignin is associated in the liquor with soluble carbohydrates which melt at relatively low temperatures and are hygroscopic in nature, thus tending to make the product hard to dry and difficult to store. If the carbohydrates are first removed, as by fermentation to make alcohol or to produce yeast bodies, evaporation of the remaining liquor leaves a lignin which dries easily and is not hygroscopic

It would seem then, that the future may see well integrated units of the sulfite industry operating on the ammonia base system, fermenting the sugars to produce alcohol or utilizing the carbohydrates and the ammonium salts to produce yeast protein. The remaining liquor will then be concentrated to recover the fuel value of the organic material contained in it or evaporated to produce a non-hygroscopic lignosulfonic acid for chemical utilization. The organic ammonium compounds may also have possibilities as a fertilizer.

Lignin, as obtained from the various pulping processes, has already found a number of applications. Thiolignin is almost as good as channel black for the filling of Buna rubber. Soda lignin, because of the phenolic groups present in the molecule is a good extender for phenols in the preparation of bakelite-type resins. It is reported that it can be substituted, up to 50 percent, for the phenols in making laminated products without affecting adversely the properties of the material. Ligno-sulfonic acid has been employed as

a dispersing agent in concrete and the removal of sugars is said to improve it for this application. The future will undoubtedly see a wide extension of uses for the various forms of lignin.

The chemical alteration of lignin toward the production of new products is hampered by our inadequate knowledge concerning the molecular structure of the material.

The products popularly referred to as "lignin" are certainly not identical to the material "interpenetrating and encrusting the cellulose fabric of wood," nor is the "lignin" isolated by one procedure identical to that isolated by another.

As we look into the future we can expect great advances in the clarification of this interesting and important problem.

The production of vanillin is the result. not of a hit and miss type of experiment, but, of systematic scientific research carried out in an attempt to elucidate the structure of lignin. The isolation of vanillin from coniferous sulfite spent liquor has established the following scientific facts: that lignin contains a 3-methoxy-4-hydroxybenzyl grouping, and that part of the sulfonation takes place at an a-carbon atom of the side chain. On the other hand, the isolation of syringic aldehyde from sulfite spent liquor of a hardwood cook proves the presence of a 3, 5-dimethoxy-4-hydroxybenzyl group in the hardwood lignin. The isolation of cylohexylpropane derivatives on the hydrogenation of lignin proves that lignin is built up, at least in part, of phenylpropane building stones. How these are combined with each other is still unknown. The discovery, by Kürschner, that vanillin can be obtained from sulfite spent liquor on alkaline hydrolysis has led to a commercial production of this flavoring material, shows how systematic fundamental research can produce valuable results.

Intensive work is in progress on the chemistry of vanillin to use it as a chemical raw material. The present use of vanillin as a flavoring material can only use a small percentage of the tremendous possible production. The hydroxy groups of lignin can be esterfied and some important applications have been found for the lignin esters of long chain fatty acids. Lignin can likewise be coupled with long chain amines, and when half of one percent of this product is put in asphalt it causes the asphalt to make an almost perfect bond even with wet stone.

The pulp industry is now in a position similar to that of the illuminating gas industry in the last century when there was no known use for the coal tar obtained as an apparently valueless by-product. When an intensive investigation of the tar had led to the isolation of the various components, a whole new chemical industry, the coal tar dyestuff industry, was created. Since lignin is the only organic material reproduced every year by millions of tons for which no substantial use has been

found yet, it is obvious that the time has come for a concentrated effort to solve its structure. The solution will not be as simple as was that of coal tar, but the progress made during the past 25 years and economic necessity together will spur industry to produce a new family of chemicals.

These are but a few examples of what has already been done by applying such chemical knowledge as we have concerning lignin. As our knowledge increases, the 2,500,000 tons of this material available annually in this industry will prove to be a veritable gold mine for chemical raw materials.

Paper and Paper Products

The chemistry of the making of paper is concerned mainly with physico-chemical or colloid properties of cellulose. The tensile strength of a single fibre compares favorably with the tensile strength of a comparable strand of steel. Yet when the pulp fibres are assembled in a sheet of paper the resulting paper only attains about 10 percent of the ultimate strength of the individual fibres.

Here is a double challenge in obtaining the maximum strength from wood fiber. In the first place, as methods have developed for making a stronger sheet of paper the amount of pigmentation can be increased. There has been a definite tendency in this direction in the paper industry during the past few years. High quality book papers today may contain as high as 50 percent non-fibrous fillers and adhesives, whereas 10 years ago a non-fibrous content of 33 percent was considered high. In the second place, if paper could be made stronger there would be a possible economy of raw material by the use of lighter weights to do the job of heavier papers. Thus the basis weight can be reduced and a greater area obtained from the same amount of fiber. This tendency is exemplified by a large production of machine coated papers in a basis weight range of 40 to 45# (25 x 38-500 ream). Another example is air mail paper which is used extensively and which is light, strong, and relatively opaque. This, of course, is a high cost specialty at present but it is indicative of the trend.

One of the great problems faced by the industry in the effort to make a better paper is that of control of the properties of the pulp and furnish along the line of manufacture. No really satisfactory and rapid evaluation methods for stock stand-ardization are available whereby control of finished product can be achieved. It is still true that the only way to find out what kind of paper a given stock will make is to make paper from it.

Fundamental studies now being conducted independently by Thode and by Mason give rise to hopes that the above situation need not always be the case. It is thought by a number of investigators that basic properties of the fibers particularly the electrokinetic charge (zeta potential) and the surface area, greatly affect the properties of the ultimate paper formed from the fibers. It follows that if a quantitative relation can be found to exist between such basic properties and the

ONE OF U.S. MILLS NOW USING AMMONIA BASE



JOHN B. CALKIN, in article on these pages, says more mills in sulfite field will turn to new process and he mentions ammonia base as one holding great promise. Here is an eir view of little LEBANON, OREGON, Division of Crown Zellorbath, second mill in Far West to go to ammonia and its production was last report in-

creased by 60 tens a week. Trials evaporation and burning and evaporation are proceeding. It was rated a 55 tens a day mill, using western hemick and white fir. By the end of 1921 it is probable that 10 or 11 U.S. mills in Maine, Wisconsin and Washington will be using ammonia instead of calcium base liquer.

quality of finished paper, a control method might be developed which would help make better paper and more uniform paper at a lower cost.

There are many uses for paper, in printing and other categories, where paper with greater resistance to expansion and contraction under varying degrees of humidity is very desirable. Less susceptibility to moisture changes in the atmosphere and in processes, such as offset lithography, would be highly advantageous.

Paper is unique in that it is the most inexpensive flexible plastic film which can be produced. Because of this fact and the very considerable expansion of research in the paper industry during the last 20 years the uses of paper have multiplied enormously. We find such diverse items as a magnetic recording paper, insulating paper, condenser papers, saturating papers for resin impregnation, papers for facsimile reproduction, paper printing plates, paper diapers, diaper liners, templets, vulcanized fiber board for leather in luggage and many other uses.

In recent years paper technologists have laminated, impregnated, coated, incorporated additives before paper fabrication and otherwise modified cellulose fibers with a wide variety of high polymer materials. Will people use paper sheets? There was a time when there were no paper diapers.

Derivatives of cellulose, such as methyl ether, ethyl ether and others, are finding increased application as paper impregnants for special desirable properties. Work is in progress on synthetic latices and resin dispersions for beater applications. Cellulose derivatives and other resins are on the increase for coatings. The whole subject of resinography is of great interest to the industry. Extensive research is being conducted on additives to paper which increase fiber to fiber bonding.

There are recent developments in water repellency for paper which involve a new approach. One product also has sizing characteristics which are of interest.

integration of Forest Industries

As time has progressed there has been an accelerated tendency for the wood-using industries toward integration. There are relatively few strictly pulp mills operating, except in conjunction with paper mills. In the paper mills there is an increasing tendency to make end-products. A large multi-plant paper manufacturer has chemical products such as tall oil, turpentine, activated charcoal and other products.

In Canada and the U.S. industrial alcohol is obtained from sulfite liquor. The wood flour used as filler in plastics for parts in shoes and other products may be from waste wood, the vanilla flavor of ice cream has much better than an even chance of coming from sulfite spent liquor.

The universality of wood, its abundance and the fact that it is inexhaustible provided trees are harvested as a crop on a sustained yield program, make it unique as a raw material.

Think of the everyday uses of paper, so familiar to all of us. Then add laminated paper for panel and structural units, creped paper for insulation, honeycombed paper for strengthening plywood panels, the use of specially treated paper for particular purposes such as the wrapping of food and perishables—the list appears to be endless.

Now take the many uses of wood itself in products. Then swing to chemical byproducts from the pulp and paper industry that go into resins, plastics, paints, insecticides, hormones, yeast, and other products.

Clearly the problems of paper have made it a chemical industry in the past few decades.

INDUSTRY ORGANIZATIONS AND THEIR LEADERS 1952-1953 ASSOCIATIONS AND INSTITUTES

UNITED STATES SECTION @ @



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Secy.-Treas., ROSS Secy.-Tre



PRODUCERS ASSN. INC. JAMES L. RITCHIE (photo), Executive Director. Association head-quarters at 122 East 42nd St., New York, N.Y. (17).



FOREST INDUSTRIES COUNCIL CLYDE MARTIN Chairman. (photo), Chairman. He is Chief Forester, Weyerhaeuser ber Co. Association headquarters at 122 East 42nd, N.Y.C. 17. Secy., ROBERT E.

Secy., ROBI O'CONNOR.



TREES FOR

TOMORROW INC.

FOLKE BECKER (photo), President. He is Pres., Rhine-lander (Wis.) Paper

Association head-quarters at Merrill, Wis. Exec. Director, M. N. TAYLOR.

J. R. BEMIS (photo), President. Pres., Ozan Lumber Co. and projected White Star Paper Co., Pres-cott, Ark. Pres., headquarters Agen at Nat. Bk. of Commerce Bdg., New Orleans, La. Secy., H. C. BERCKES.



SYRACUSE PULP & PAPER ALUMNI LIONEL M. SUTH-ERLAND (photo), ERLAND (photo), President. He is Vice Pres., Sutherland Refree, Sucherland Re-finer Corp. Head-quarters at State Univ., College of Forestry, Syracuse, N.Y. Secy.-Treas., LOUIS B. TAYLOR.



U.S. FOREST PRODUCTS LABORATORY-

LABORATORY—
Pulp and Paper Div.
GARDNER H.
CHIDESTER (photo), Chief of Division. Laboratory is at Madison, Wis.

INSTITUTE OF PAPER CHEMISTRY WESTBROOKE STEELE (photo), President. Institute is at Appleton, Wis. Vice Pres. and Secy. JOHN STRANGE.



UNIV. OF MAINE PULP & PAPER FOUNDATION J. L. OBER (photo), Chairman. He is Vice Pres., Scott Paper Co. Headquar-Univ. or Me. ters at Univ. of Maine, Orono, Me. JOHN B. CALKIN, Secretary.



Pres., Puget Sound Pulp & Timber Co. Association head-quarters at Amer. Bank Bdg., Portland, Ore. Secy., S. GRIMES.

PAC. COAST ASSN. OF PULP & PAPER MFRS.

LAWSON P. TUR-

COTTE (photo), President. He is





NEWSPRINT ASSN. OF CANADA ROBERT M. FOW-LER (photo), President. dent.
Assn. headquarters
Montreal, Que. Secy.,
at 2280 Sun Life Bdg.
Montreal. Que. Secy.,
J. M. SAVAGE.





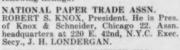
WOODLANDS SEC-

TION, CPPA J. B. MATTHEWS (photo), Chairman. He is Chief Forester, Abitibi Power Paper Co. Assn. headquarters, Sun Life Bldg., Montreal, Manager, W. A. E. PEPLER.





We regret that photographs of the chief officers were not received to use with the following listings:



WAXED PAPER INSTITUTE INC.
J. E. EDELSTEIN, Chairman of Exec. Committee. He is Vice Pres. of Rapinwax Paper Co., Minneapolis 14, Minn. Association headquarters at 38 So. Dearborn St., Chicago 3. A. H. NOELKE, Secy.-Treas.









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This "baby" digester actually works. It is a miniature of what tomorrow's rotary digester may be like. It is one of several such digesters regularly built by Biggs to undergo the laboratory tests that furnish the information which enables Biggs to maintain leadership in the field of paper making digester equipment.

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PULP & PAPER

1952 Review Number

how National technical service can help you

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STANDARD STAINED SULPHATE SULPHITE FIBER MIXTURE MAGNIFIED SO TIMES

Painstaking laboratory work to determine the most economical dye-formula and furnish is essential before a paper is actually made in the mill.

Preliminary laboratory work will assure colors that have the proper fastness, physical and chemical properties for the characteristics required in the finished sheet. Laboratory analysis of fiber composition may suggest ways to provide a more economical furnish for the sheet to be duplicated.

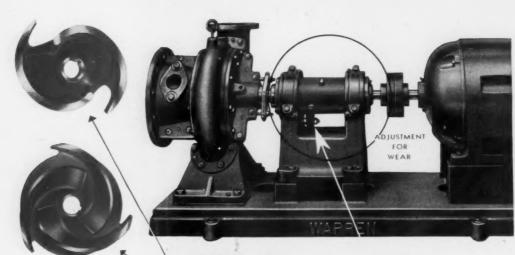
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for one. but not one for all

The heart of a pump is the IMPELLER, and in each type and size of Warren Stock Pumps FIVE different impellers are available, each designed specifically for five different operating services, yet they all fit the same size and type of pump.

Each of these impellers "washes its own back" . . . in other words, the Eductor Vanes with which they are equipped, and pioneered by Warren, keep the space back of the impeller pumped free of fibre or grit, reduce pressure on the stuffing box and insure long packing life.

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Back of typical Warren Impeller showing Eductor Vanes

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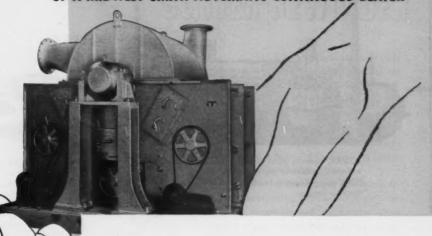
PP-25

WARREN PUMPS

WARREN STEAM PUMP COMPANY, INC., WARREN MASSACHUSETTS

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OF A MIDWEST-SMITH AUTOMATIC CONTINUOUS BEATER



One doesn't have to be an "Einstein" to appreciate the tremendous refining capacity of a Midwest-Smith beater—50 to 100 tons a day, depending on the type of stock and the mills requirement. It's all as clear as crystal—explainable as follows:

Based on a roll speed of 157 rpm the total face of the roll bars and three bed plates adds up to a wet beating factor of over 44,000,000 square inches per minute. That means a hydrating surface of from 4 to 8 times that of any other beater or refiner on the market.

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with the fiber characteristics, freeness drop desired and tonnage required for the paper machine. On Kraft and other hard stocks an output of from 50 to 100 tons can be expected. On soda pulp or sulphite the rate should run considerably higher.

If you want continuous operation, development of the maximum mullen, tensile and tear characteristics of the stock plus high production, a Midwest-Smith will give it to you.

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Power—a 350 hp motor will suffice. Tackle maintenance very low because there is no bar to bar contact.

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THE MIDWEST - FULTON MACHINE CO., DAYTON 3, OHIO



TODAY, conservation of valuable materials from flue gases of black-liquor-fired recovery boilers is more important to the kraft paper industry than ever before. That's why Koppers has developed a special horizontal-flow electrostatic precipitator for this service.

Here's why you get <u>more profitable</u> recovery with Koppers-Elex electrostatic precipitators!

HERE'S THE RECORD*

Cleaning flue gases on a 250-ton recovery boiler, a Koppers-Elex precipitator bettered the guaranteed recovery efficiency of 92.5% by an extra 2.5%. This highly satisfactory performance was obtained even though the unit was operating under a 15% overload... and was verified by tests made by the customer.

CUARANTEED recovery at any efficiency you specify!
That's one big reason why more and more kraft mill operators specify Koppers-Elex electrostatic precipitators for profitable recovery of valuable sodium sulfate and sodium carbonate from black liquor processes.

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Hundreds of Elex precipitators are in use today all over the world. Koppers-Elex electrostatic precipitators are designed, engineered, fabricated and erected under one contract by the Koppers Company . . . and each installation comes complete with "packaged" mechanical or vacuum tube power packs. If

you have a gas-cleaning problem, write today to: Koppers Company, Inc., Precipitator Dept., 246 Scott St., Baltimore 3, Maryland.

*Guaranteed: Koppera-Elex precipitators are guaranteed to equal or better (under tests made by your own personnel) any efficiency or residual content you specify.



Koppers-Elex ELECTROSTATIC PRECIPITATORS



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SELECTS BR.5 SHEAR-CUT

SLITTER-REWINDER

The Wrenn Paper Company, widely recognized for its high quality products, was faced with the problem of slitting a hard-tohandle material. Clean, square edges and uniformly wound rolls were of utmost importance.

After considering several machines, the Bagley & Sewall #15 Shear-Cut Slitter-Rewinder was selected.

B & S Slitters and Rewinders are doing outstanding jobs in mills and converting plants all over the country. Their many unique money-saving advantages make them the first choice of the industry. Before you buy, compare...and your choice, too, will be B & S Slitting and Rewinding equipment.

For full details write to The Bagley & Sewall Company, Watertown, New York.



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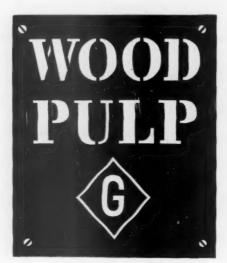
Foreign Representative: CASTLE & OVERTON, INC., 630 Fifth Avenue, New York 20, N.Y.

1952 Review Number

PULP & PAPER

37

Established 1886



"Enterprises of great pith and moment."

SHAKESPEARE

By every standard—dollar volume, position in American industry, number of employees, importance to the economic life of the nation and high quality of product—by any or all of these gauges, Pulp and Paper is assuredly among the "enterprises of great pith and moment."

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WORLD PULP TRENDS

SUPPLY AND DEMAND IN DELICATE BALANCE

By James L. Ritchie

Executive Director, U. S. Pulp Producers Association, Inc.
(Written Especially for this WORLD REVIEW Issue of PULP & PAPER)

North America, in 1951, produced approximately 70% of the total volume of woodpulp produced in the Non-Communist World, and consumed about 70% of the Non-Communist World's supply.

North American wood-pulp capacity, by Jan. 1, 1954 is expected to total over 31.3 million tons, exceeding January 1, 1951 capacity by at least 4.8 million tons, or 18%.

Meanwhile, pulpwood shortages will continue to prevent any significant increase in pulp productive capacity in other regions of the Non-Communist World.

For the foreseeable future, therefore, the Western World must look primarily to North American supply sources for any additional pulp and paper requirements needed to support economic growth.

Availabilities of market chemical woodpulp in all world regions have improved materially in recent months. The improvement in availabilities may be attributed to:

1—Improvement in world supply—as a direct result of sustained high level production, over the past year or more, in all of the major countries of supply.

2—Curtailment of world demand—as a direct result of the operation of inventory cycles in world pulp and paper markets, and the consumption limitations of NPA Order M-72.

Production of paper grades of market chemical pulp in the major producing countries in 1951 exceeded the 1950 level of production by about 11%. Despite this 11% increase in supply, however, availabilities of paper grades of market chemical pulp for United States consumption were 3% less in 1951 than they were the year before, while deliveries to other world markets were 16% more. Had it not been for the withholding provisions of M-72, which were partially responsible for an 11% increase in U.S. production of paper grades of market chemical woodpulp, the decline in aggregate U.S. availabilities last year would have been substantially more than 3%.

Despite the substantial diversions of market chemical pulp to more profitable old world markets, and despite consequent improvements in the paper and paperboard economies of the Old World, aggregate market pulp deliveries to world areas other than Scandinavia and North America were 15% less in 1951 than they were way back in 1937. There is still considerable room for improvement, therefore, in the level of pulp consumption in these Old World countries. Unlike the U.S., most of these Old World countries, because of a scarcity of wood resources, are, and will continue to be, preponderantly dependent upon imported woodpulp. While international trade problems and internal growing pains will continue to be obstacles to rapid development of these overseas paper industries, necessity is nevertheless the mother of invention, and it may reasonably be expected that there will be growing competition, both short and long term, for the world's limited available supply of marketable papermaking fiber.

An important change has occurred, in recent years, in the basic relationship of world market pulp supply and demand. From a position of almost continuous oversupply in world markets, the supply/demand relationship has shifted to one of far more delicate balance. This shift basically, is more or less permanent in character, and far outweighs in significance the transitory market changes that are always bound to occur during temporary periods of market readjustment.

The prospective world supply of market chemical woodpulp will be adequate, in my opinion, to support a steady high level world demand over an extended period, even in a defense economy; it will not be adequate, in my opinion, to meet the peak levels of pulp demand that could result from volatile procurement policies—peak loads of demand must be anticipated and provided for in advance by market pulp consumers if maximum levels of non-integrated paper and board production are to be assured in cyclical "boom" markets.

In the future, therefore, the market pulp consumer must look first and foremost to the security of his fiber supply, rather than to speculative opportunities. This will be true as long as world supply and demand remains delicately balanced, and the probabilities are that, except for periods of readjustment, world market chemical pulp supply and demand will remain delicately balanced for a long time to come.

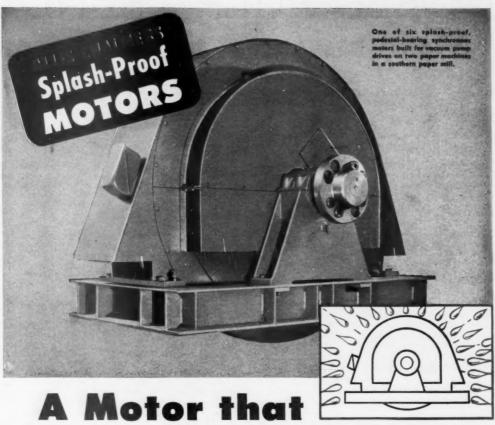
Mr. Ritchie's Views On Some Old "Cliches"

"It may be argued that the defense industries will produce hard goods, and that hard goods require little paper," writes J. L. Ritchie, U.S. Pulp Producers Assn. Inc. "I submit that this is a fallacy. Incoming freight for hard goods' assembly is largely packaged, even though certain end products of the hard goods' industries may not be. With soft goods, incoming freight is generally in bulk, and the end products packaged. Paper requirements are none-the-less real because they are invisible to the ultimate consumer. And certainly as far as advertising is concerned, the experience of the last war indicates that defense production has no adverse effects on advertising volume.

"The old notion that paper demand must be related solely to the trend of non-durable goods production, in my opinion, requires re-examination. It is a cliche that appears to be an anachronism in this age of modern packaging."

WORLD WOODPULP SUMMARY (In Thousands of Short Tons) By Canadian Pulp & Paper Assn.—U. S. Pulp Producers Assn.

	1990				150		1951		1951	
	Capacity	Production	Consumpt ion	Imports	Experts	Capacity	Production	Consumption	Imports	Esports
TOTAL CHEMICAL	23 420	21 370	21.564	5.020	5,072	35.317	24,140	23, 590	3.171	3.400
North America	15.669	14.796	18,325	2 131	1.586	17.145	16.621	16 983	2.079	2.132
Latin America	146	3.08	.349	324	~	146	100	359	365	
Europe	6,906	5.947	5, 229	2,441	3,386	7,071	6,403	5, 533	2.534	3,258
Northern	5 268	4.555	1.504	22	3.199	5.386	4,804	1.800	15	3.053
Eastern	56	39	28	36		96	43	. 70	35	9
Western.	360	. 33.5	2.213	1.828	6	384	335	2.238	1.895	4
Central	1.222	1.038	1.434	555	181	1.245	1.140	1.530	509	202
South Africa	19	19	20	. 1	0	20	20	21	2	0
Asia & Pacific	680	807	641	123	0	935	796	942	191	0
TOTAL MECHANICAL	14.470	12,242	.12,112	1.108	1.111	14 832	13,142	12.950	1.179	1,179
North America	9.256	8.124	0.125	280	248	9,533	8,704	8.682	322	315
Latin America	110	97	111	13		115	105	122	16	
Europe	4,463	3,57)	3,422		862	4,526	3,761	3.594	837	_863
Northern	2.827	2.239	1,380	0	851	3.842	2,297	1,420	0	852
Eastern	43	28"	34	6	0	41	31	. 34	5	0
Western	663	553	1.209	782	2	687	574	1,239	777	2
Central	930	751	800	55	9	956	859	399	55	9
South Africa					0				0	0
Asis & Pacific	643	450	454	3	1	658	572	552	- 4	1
GRAND TOTAL	37,890	33.612	33,676	6.128	6.183	40,149	37.282	36,500	6.397	6.579



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You can put motors like this to work just about anywhere in a paper plant because their splash-proof design keeps water and other liquids out.

This design enables you to locate driven equipment for maximum installation economy and efficiency... without resorting to special motor housings or separate motor rooms.

Built-in protection—meeting NEMA standards for splash-proof construction —offers you a threefold saving in operation: (1) Maintenance costs are reduced. (2) Down time is minimized. (3) Motor life is lengthened.

By specifying Allis-Chalmers motors, you gain all these advantages plus sturdy fabricated-steel stator yokes...securely held windings processed for long insulation life.. liberally proportioned bearings...and many other details that contribute to low-cost operation.

You can get these features in all ratings used in the paper industry. And you can be sure that each motor will be engineered to fit your power supply requirements and the grinder, chipper, pump, or other equipment with which it is to be used.

More information about large pedestal-bearing motors is available for ready reference in the following bulletins: 05B7648 (low speed synchronous); 05B7649 (high speed synchronous); 05B7771 (induction).

Ask your nearby A-C representative for copies of these three illustrated bulletins, or write to Allis-Chalmers, Milwaukee 1, Wisconsin.

A.3586

ALLIS-CHALMERS



EUROPE'S WOOD PROBLEMS

A Program Is Proposed To Relieve the Shortage

By Walker J. Myers

Pulp, Paper and Paperboard Div., U.S. National Production Authority (The author has engaged in pulp and paper work for the U.S. Government for 15 years, mostly in foreign trade fields.)

World War II deprived the pulp and paper industry in Western Europe of some 4,500,000 cubic meters annually of its basic raw material, pulpwood, formerly imported from countries now behind the Iron Curtain, This total approximated one-third of the West's apparent shortage of wood, at least through 1947. During the three following years, Western Europe substantially increased its pulp output to a total of 8,500,000 metric tons (9,350,-000 short tons) in 1950, and stepped up its pulpwood consumption to more than 34,-000,000 cubic meters (one cord equals 2.55 cu. meters) despite manifold difficulties of

At the start of 1952, pulp production was, at a yearly rate (9,200,000 metric tons-10,120,000 short tons), some half million metric tons below its maximum potential (9,700,000 tons), and pulpwood availabilities were about 1,900,000 cubic meters below the 38,200,000 cubic meters required for a capacity pulp output. If it may be broadly assumed that all other raw materials and operating factors necessary to full-scale pulp production could be provided, the figure of 1,900,000 cubic meters would represent the current European pulpwood deficit on an annual ba-

With domestic production, as well as imports, of pulpwood in Western Europe probably not far from their peak at the present time, the basic situation involves the paradoxical problem of superimposing a steadily growing pulp output upon a relatively constant supply of wood. A bright spot for the pulp industry is the recent substantial diversion of pitprops being attracted to the pulp mills by high prices.

The pulp and paper industries of Western Europe until recent years were left largely to their own devices to find the pulpwood and other fibrous materials necessary for a program of steady pulp expansion. To that end, the following proposals are among those most widely favored for conserving the present limited availabilities of wood and of adding to the supply of fibers for paper making:

More intensive reforestation (already practiced in Europe to a high degree, and exemplified by a new 10,000,000-acre project in France).

Closer utilization of sawmill and forest waste (as already practiced by the pulp mills of Northern Europe).

Greater use of hardwoods (as in the case of beech for dissolving wood pulp in Germany and Austria).

Introduction of high-yield pulping methods, to conserve pulpwood.

Diversion of fuel wood or other timber to pulp mills (the former would require additional supplies of mineral fuel).

Larger consumption of agricultural residues, such as wheat and rye straw as, chiefly, in the Netherlands and Italy

Exploitation of tropical and colonial for-

ests (largely hardwood).

Western European nations are engaging in cooperative studies to find means of replacing the pulpwood lost to them as a result of war. Though a unified program has not yet materialized, recognition of the interdependent nature of raw-material problems in pulp and paper should facilitate their ultimate solution. Thus the first major pulpwood shortage in a century of modern European paper manufacture is a challenge which the Western nations collectively have now accepted and should in due course overcome

Wood Sources Before World War II

"As pulp industries sprang up across Europe, with the utilization of wood as a raw material, some countries were generally self-sufficient in their supply of suitable coniferous timber. Sweden, Finland, and Norway, in Northern Europe, as well as Austria in the central region, have consistently remained in that category and, in addition to producing sufficient paper for home consumption, have maintained substantial export markets for paper manufactures, woodpulp, and, partic-

ularly in the case of Finland, for some pulpwood as well. Among the countries receiving appreciable quantities of this northern wood (chiefly from Finland) are Germany and France, both of which depend on foreign suppliers for significant portions of their wood needs. Nearly all the remaining countries of Western Europe, though having much smaller capacities for woodpulp production than the six countries above-mentioned, also rely upon wood imports, from Finland and elsewhere.

During the years leading up to World War II, an estimated 4,500,000 cubic meters of pulpwood was shipped yearly into Western Europe by the Soviet Union and several of the countries with which it is now affiliated. Nearly three-fourths was taken by Germany as then constituted. Most of the remainder went to France, the United Kingdom, the Netherlands, and Belgium, in that order.

As a result of World War II, operations of Western Europe in pulp and paper suffered drastic reductions. Most serious and lasting dislocation of Western Europe's pulp and paper industry resulted from the diversion of pulpwood supplies formerly obtained from Eastern Europe. Apart from a relatively small postwar trade by Czechoslovakia and Poland with Switzerland and Belgium, there was almost a complete discontinuance of pulpwood shipments from behind the Curtain."

(Turn to "Russia and Communist World" Section of this WORLD REVIEW issue for Mr. Myers' further comments on the status of paper, pulp and pulpwood in Russia, Poland, Czechoslovakia, Yugoslavia, etc. Also Pulp & Paper's own data on the communist countries.)

A PRODUCER VIEWS WORLD PULP NEEDS

A year ago Pulp & Paper published a national industry address by Lawson Turcotte, president of Puget Sound Pulp & Timber Co. and of Ketchikan Pulp Co., in which he said in regard to the worldwide outlook for pulp, as contrasted with the North American outlook:

"I look for a very tight situation for quite a few years to come . . . there does not seem to be very much hope of increasing fiber production anywhere else except on this Continent."

For this 1952 WORLD REVIEW, PULP & PAPER asked Mr. Turcotte to bring his views up to date. He referred to the material developed by Walter J. Myers of the NPA, which is published in this section and in our Russia section.

"I am still of the same opinion I was at the time I made the talk in 1951." said Mr. Turcotte, "and I think you will find this substantiated by the talk of building new mills inland in British Columbia (he mentioned two projects now well under way) and I believe there are one or two more," he added, "and one in Alberta. None of these are on tidewater, which indicates they have to go to these spots for their wood supplies. And, of course, there is our own development together with the American Viscose Corp. in Alaska."

Mr. Turcotte mentioned further: "I

note'in the case of Finland they are talking of prohibiting exports of pulpwood altogether, and on Jan. 10, 1952, placed pulpwood under export control and imposed an export tax.

In this connection, Mr. Turcotte said over a vear ago:

"Per capita consumption of fiber products is rising all over the world. Populations are increasing at rapid rates, so all I can see is that we are going to need a substantial amount of additional pulp capacity. Even without any changes in standards of living, population increase alone will require it.

"In the chemical pulp supply field of eight world areas covering production and consumption of chemical pulp-consisting of North America, Latin America, Northern Europe, Eastern Europe, Western Europe, Central Europe, South Africa, Asia and Pacific, only one area (and that is Northern Europe) shows a production in excess of consumption; in other words, the other seven world areas must import chemical pulp to supplement their produc-

For photographs of Mr. Turcotte and Mr. Ritchie whose article leads this section, see preceding section on "Associations, etc.

Let's talk Vats

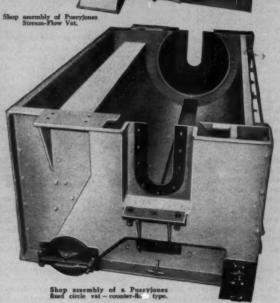
Fixed Circle or Stream Flow

Here at cylinder vat headquarters, our engineers have an experience that is unique in the Paper Industry.

If a fixed circle vat is what you need, the Puseyjones design — either counterflow or direct-flow type — is planned to avoid the common limitations which are so costly in day-to-day operation. The fixed circles are supported in a manner to permit building them in or out as needed. The openings to the vat end chambers from inside the cylinder mold are unobstructed. There is free surface run-off of foam over the spill gates. Quick-opening wash-out doors provide easy access to all stock and white water passages.

If an adjustable circle vat is what you need, Puseyjones offers an outstanding development in the Goldsmith Stream-Flow Vat. The simple, rugged adjustable vat circle gives the papermaker a tool roughly comparable to the slice of the fourdrinier machine. Over 45 of these vats are now in operation or under construction . . . and every installation has resulted in greatly improved sheet formation and increased speed possibilities.

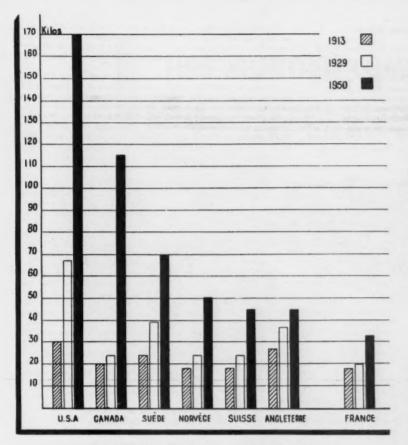
Let's talk cylinder vats now. A letter or a telephone call will put Puseyjones engineers at your service.



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Wilmington 99, Delaware, U.S.





Use of Paper—Per Capita—Selected Nations

THIS IS THE WAY a French contemporary publication, Papler, Carton at Cellulose, depicted differences in Consumption of Paper in seven selected countries: U.S.A., Canada, Sweden, Norwey, Switzerland, England and France. In our sections of nations in this WORLD REVIEW, we give most recent figures in Pounds for these and other countries.

In this table, the measure is Kilos. To convert Kilos to Pounds (approx.) multiply by 2.2.

We thought this French table was interesting because it shows graphically the changes in per capita consumption which have taken place over nearly 40 years. It shows per capita figures for 1913, 1939 and 1950.

EUROPE'S PAPER PROBLEMS

Objectives of The Aid Program-What Future Holds

By Dr. Joseph E. Atchison

Chief, Pulp & Paper Branch, U. S. Mutual Security Agency

It is the Europeans themselves who must carry the ball if any real lasting accomplishments are to be made in solving their problems. They are attacking the problems on all fronts, through the Organization for European Economic Cooperation pulp and paper committee, through their own governments, and through the efforts of each mill. We in ECA, and now in MSA (Mutual Security Agency) merely advise, suggest, help in any way possible and, in some instances, provide the dollars which are absolutely necessary.

From the short term standpoint, the most logical solution involved shipment of pulpwood, pulp and paper from the Western Hemisphere to fulfill Europe's most urgent requirements. Since Apr. 1, 1948, we have allocated \$128,000,000 for purchase of pulpwood, pulp and paper in the U.S. and Canada. During the first year, these allocations amounted to \$68,000,000; during the second year, \$30,000,000; during the third year, \$20,000,000, and during the past year about \$10,000,000. This shows a significant trend toward recovery of the European industry and less dependence upon U.S. As Europeans are able to increase dollar earnings by sales of their goods and services to U.S. and Canada, this dollar aid will decrease until it ends entirely. Exports of pulp and paper during 1951 from the U.S. and Canada to Dr. JOSEPH E. ATCHI-SON, Chief, Pulp & Paper Branch, Industrial Commodities Division, Mutual Security Agency (successor to Economic Cooperation Administration).



Europe reached record levels, yet all but a small portion were paid for with earned dollars, rather than with aid dollars.

These early shipments enabled European companies to get their mills running.

Most of them ploughed every cent of profit back into their mills. Coal production increased, pulpwood production was brought up to maximum, power output was expanded, machinery companies surpassed prewar levels, and the transportation was improved.

WESTERN EUROPE (Marshall Plan Countries)

The population increased from 248,000,-000 in 1938 to 276,000,000 in 1951. Therefore, the per capita consumption was only 76 lbs. during 1951 as compared to 80 lbs. per capita before the war. During that same period of time, U.S. consumption almost doubled, rising to almost 400 lbs. per capita in 1951.

We are all proud of the progress which has been made on the short term program. However, it was obvious even in 1948 that the long term program would have to provide for greatly increased demands far beyond the levels of prewar.

In the long term program, every possible source of fibrous material must be exploited if Europe is to meet the potential demand for pulp and paper. We are making efforts to provide facilities. First, must be softwood, then hardwoods, straw, esparto and water paper.

In view of the great need for increased consumption of paper in Europe, combined with high costs of materials, I do not foresee any appreciable increase in exports of pulp and paper from Europe to the U.S. The trend seems the other way.

For each 10 pounds of increased consumption for the 276,000,000 people in Western Europe, 1,350,000 tons of additional paper will be required. Where is the paper, the paperboard, or the raw material to produce it to come from? I feel certain more and more will come from the Western Hemisphere. In 1951, exports of pulp, paper and paperboard from the U.S. surpassed all prewar records. Let us not attempt to keep out the trickle of European paper which might find its way to the U.S. during the next few years. Instead, let us make every effort to expand this trade to the utmost in both directions. Let us promote expansion in paper the world over.

The World Outlook-The Long Term View

Pulpwood, woodpulp and paper have become important world commodities.

Even softening and a recession in some of the pulp and paper markets in 1952, does not alter one iota these still dominating, overwhelming facts of life today, as they concern this industry:

That a long term woodpulp shortage is facing the world.
 Now it is "a delicate balance," as one of our contributors to this issue writes. And the whole world must look to North America as the only area of the entire globe in a position to ease the world-wide tight pulp supply.

2. That paper is a luxury in nearly all the large areas of the world.

Exceptions are the United States and Canada and a few other favored smaller countries. And this is a situation that should, and must, be overcome as rapidly as possible if world intelligence and living standards are to be improved. And, especially, if peace is to be valued and preserved.

No matter what the temporary ups and downs may be, these two foregoing new "facts of life" are assurance of the stability and continued growth of the pulp and paper industry. Pulp resources must be developed; the benefits of paper must be spread.

An impelling force in industry growth behind all this, of course, is the increasing population of the world. But this industry has, and it should continue to grow faster proportionately, than populations. Increasing literacy, higher standards, more uses of paper, will drive it along at a faster clip.

World Paper Statistics-Estimates by Continents

Paper is a luxury in most parts of the world.

This table on production, exports, imports, and consumption, prepared by the American Paper & Pulp Association, proves it.

It must not be a luxury, if world intelligence and standards are to advance and improve—as they should.

Just think how much more paper is going to have to be made in the world, if the paper consumptions in Africa, the Near East and Asia are to be raised to even approach the Latin America mark! Or if Latin America's usage of 17 pounds per person was to be raised to the level of Continental Europe! It would require, literally, millions of tons of paper! Figure it out yourself.

In Asia, for example, there is well over one billion people, now estimated as using less than 4 lbs. of paper per person per year. It would take 10,000,000 more tons of paper to bring them to the Latin American mark

In later chapters in this issue, we report consumption in individual countries—in the sections devoted to each country.

It is something to stir the imagination to compare consumption of 381 lbs. per person in the U.S., with an estimated 13 or 14 lbs. per person in European Russia; with 12 lbs. per person in Brazil; 63 lbs. per person in France; 16 lbs. per person in Greece; less than one lb. in French West Africa; less than 2 lbs. in Iran. And then to try to visualize what slight increases would require in more paper.

On two pounds of paper a year for reading matter alone, how is the average Iranian going to be able to read much about issues which are whirling his country into a vortex of fateful events for the entire world?

The APPA explains that most of this data is for 1950, or estimates have been made from the latest available statistics for post-war years.

Everest on Tariffs

D. C. Everest, chairman of Marathon Corp., forecasts a resurgence of protective tariffs for U. S. industries. Here are his views on world policy:

"My guess is that within less than ten years the political party, whether it be an old or a new one, which advocates a protective tariff for American industry will have the support of labor unions, farmers and a myriad of other people. They will then realize the effect of low-paid foreign competition on their own individual situations. I just don't know how we are going to harmonize our present ECA efforts with the future national economy. The one thing ECA should have done was to make decent grants to educational institutions to provide trained scientists for future operations both here and abroad, as we are not training them as fast as our growing business requires them."

Pulpwood Abundant In British Columbia

Confidence of investors and operators in British Columbia's pulp possibilities has been confirmed by the province's forest inventory now being undertaken on a broader scale than ever before.

While the inventory is far from complete, the figures so far tabulated indicate that British Columbia has 86 billion feet of timber more than previously estimated, and that hemlock and spruce, highly favored in pulp manufacture, are the most abundant species.

There are more than 80 billion feet of hemlock in British Columbia in the coastal region of the province and an additional 9 billion feet in the interior. There are 12 billion feet of spruce on the coast and 55 billion feet in the interior—significant in view of the fact that three new pulp projects are located in the interior of the province—Westminster Paper Co. at Prince George, Western Plywood Co. at Quesnel and Celgar Development (Celanese) at Castlegar.

French Paper Firm May Make Pulp in Mexico

Jacques Franck, representing Societe des Cartonneries de la Rochette, Paris, manufacturers of pulp and paper in several mills in France, French Equatorial Africa and Morocco, made a brief visit to Vancouver, B.C., and other Northwest points with a view to studying new production methods. It is understood that his company is interested in a proposed pulp project in Mexico.

Continent	Production		Exports Tons)	Apparent Consumption	(a) Population (1,000s)	Lbs./C Current Report	
North America	31,112,213	5,130,002	5,504,673	30,737,542	165,534	371.37	349.67
Central and South America	707,188	633,126	809	1,339,505	156,817	17.08	16.54
Northern Europe	2,694,575	12,917	1,978,572	728,920	14,310	101.87	115.53
Continental Europe	10,727,288	1,661,831	1,078,344	11,310,775	532,586	42.47	48.51
Africa	80,114	349,304	2,976	426,442	131,863	6.47	5.14
Near East	20,410	68,929	4,964	84,375	62,621	2.69	2.64
Asia	1,376,463	540,801	22,605	1,894,659	1,139,336	3.33	2.41
Australasia	237,213	146,344	2,616	380,941	10,134	75.18	98.49
WORLD	46,955,464	8,543,254	8,595,559	46,903,159	2,213,201	42.38	42.62

Approved Pulp Testers

The Certified Pulp Testers Bureau has listed for 1952 these laboratories and directors: Baker, D. H.—H. R. MacMillan Export Co., Nanaimo, B.C.; Bradford, Harry C.—Rex Paper Co., Kalamazoo, Mich.; Bringman, Robert E.—St. Joe Paper Co., Port St. Joe, Fla.; Brown, W. W.—Howe Sound Pulp Co., Port Mellon, B.C.; Butler, R. A.—Pacific Mills, Ltd., Ocean Falls, B.C.; Clark, Clarence T.—Restigouche Co., Ltd., Campbellton, N.B.; Enghouse, Clarence A.—Crown Zellerbach Corp., West Linn, Ore.; Hartnagel, Nelson—Fibreboard Products,

Inc., Fort Angeles, Wash.; Ingram, C. D.—Hollingsworth & Whitney Co., Mobile, Ala.; Jacoby, W. C.—Crown Zellerbach, Camas, Wash.; McLean, E. A. G.—MacMillan & Bloedell, Port Alberni, B.C.; Marriott, Robert R.—Crown Zellerbach Corp., Port Townsend, Wash.; Modern, F. P.—Anglo-Canadian Mills, Quebec, P.Q.; Sherk, Dr. D. L.—Columbia Cellulose Co., Prince Rupert, B.C.; Smith, C. L.—National Container Corp. Jacksonville, Fla.; Tennent, G. R.—Hummel-Ross Div., Continental Can Co., Hopewell, Va.; Thieme, R. I.—Soundview Div., Scott Paper Co., Everett, Wash.; Weleber, F. J.—Publishers Paper Co., Oregon City, Ore.

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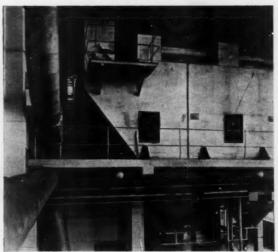
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PULP & PAPER

1952 Review Number



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NORTH AMERICA

U.S.A

PAST - FUTURE

In World's Paper Economy, U. S. Moves Out of Deficit Position—An Export Woodpulp Balance Is Foreseen

For the pulp and paper industry 1951 was another record year. The production record of 1950 for total paper and board was broken with a margin of 1,700,000 tons to spare. Apparent consumption of all grades showed a similar increase.

These records were made possible by a record domestic production of wood pulp. Because imports of market wood pulp were 3% lower, the increase in production of almost 1,700,000 tons of wood pulp by U. S. pulp producers is clearly the base upon which the 1951 records were built.

The year may be broken into two parts. The first six months both major groups, paper and board, were operating at full capacity and made a total of 13,733,501 tons, or at an annual rate of almost twenty-seven and a half million tons.

During the last half of the year, while the paperboard group was reducing both its back log of orders and its production, the paper group continued to produce at a high capacity rate. The net result was a drop in total production so that the actual overall production for the year was 26,686,000 tons.

The industry continued throughout the year to expand its production facilities for both woodpulp and paper. The 1941 increase in annual paper and board making capacity was 1,049,000 tons on a normal 310 days yearly basis. Woodpulp capacity likewise increased by 1,283,000 tons, based on the normal operating rates of individual pulp mills.

During 1951 the North American pulp and paper industry demonstrated that its position in the world paper economy was in the process of change from a deficit position. During the year, imports of both pulp and paper from Northern Europe were reduced to a minimum, and yet record production and consumption were recorded in both the United States and Canada.

Woodpulp production in the United States has made notable strides since the days before World War II. Then the imports of European pulp were 15.6% of U. S. new supply. In 1951 this percentage was reduced to 2.6%.

The prospects are, in view of increased North American pulp capacity, now in sight, that North America will turn from an import balance to an export balance on woodpulp in the not too distant future.

The significance of this possibility from a National Defense aspect is that we can expect no repetition of the extreme paper and pulp shortages that were experienced in World War II because European pulp supplies were cut off.

Tonnage-wise and percentage-wise they are much less important to us. True, they are important to the individual companies for the production of certain grades and an absolute cut-off would injure these mills, possibly severely. But European pulps no longer dominate the woodpulp market on this side of the Atlantic. And, if cut off by war conditions, it is believed that this pulp could be replaced by North American production.

So far as is at present known, there is no expectation of serious shortages this year in the materials that seemed critical last year. Sulfur is apparently under control and generally mills are getting adequate supplies of chlorine. Except for the steel situation, which at the moment of writing is still in a state of flux, the supply of controlled materials is easing. The prospects are that in 1952 supplies of all kinds, including paper and pulp, will be adequate to meet current demand.

WASHINGTON IS NO.1 WOODPULP STATE

Washington is far ahead of all other states in total woodpulp production, according to the latest figures for 1951, issued by the U. S. Pulp Producers Association Inc.

The "BIG SIX" states in the woodpulp field have all shown increases.

While Washington dominates the picture—producing almost 50% more than its nearest rival, Louisiana—three Southern states also have shown big gains.

Since 1946—in five years—all have increased, but in that time, Louisiana advanced from 3rd to 2nd place, over Maine. Florida and Georgia both passed Wisconsin.

Here's the latest ranking with comparable figures five years previously for the "BIG SIX.":

LEADING WOODPULP STATES

State	1951*	1946
1st WASHINGTON	2.053.094	1 332 940
2nd LOUISIANA	1.489.000	989.388
3rd MAINE	1.328.000	1 185 232
4th FLORIDA		694 594
5th GEORGIA		422 648
6th WISCONSIN		889,139

* Preliminary report by U. S. Pulp Producers Assn. Inc.

by

Dr. Louis T. Stevenson, Economist American Paper and Pulp Association (Written Especially for Pulp & Paper)



DR. STEVENSON, cuther of this article, sees possible expert belance for North American woodpulp in future.

U. S. Population—151,689,000. Annual per capita consumption of paper—381 lbs.

75 Years—How Uses Of Pulp and Paper Grew

The population of the United States has tripled in about 75 years.

But the production of paper and paperboard has increased more than 57 times! The production of woodpulp has skyrocketed 730 times and consumption of woodpulp has increased even more—784 times over. There was no sulfite or kraft pulp 75 years ago—only soda and groundwood.

This is dramatic proof of dynamic potentiality of this industry—population alone does not provide any important explanation of the increased use of paper. We must look to the increased literacy, reading, new paper uses, etc., for the explanation.

American Paper & Pulp Association, on its 75th anniversary this year, provided these interesting figures:

	1879	1951
U. S. Population Paper Production	50,155,783	154,353,000
(tons)	452,017	26,086,115
Woodpulp Producti (tons)	22,570	16,494,386
Consumption, wood pulp (tons)	22,570	17,703,944°
Consumption rags (tons)	200,005	389,434
Consumption waste per (tons)		9,078,879
Consumption straw (tons)	245,838	401,397

^o For paper and board. Consumption of woodpulp for other products: 713,940 tons.

U.S. Total Output Down in 1952 from Record

The United States paper industry was about 9% off from its all-time record-breaking production pace of 1951 in the

first quarter of this year and there was some further slowing up in the next quarter, but steadying influences were foreseen, as indicated in the lead article of this section by Dr. Stevenson.

Production in the first quarter of 1952 was 6,183,000 tons, according to APPA. This was at an annual rate of 24,732,000 tons as compared with last year's actual production of 26,086,115 tons.

Broken down by major segments, some paper grades, however, exceeded last year's mark. Newsprint was 4% higher, building paper 21½% lower, building board 2% lower, and paperboard 17% lower. In general the production of paper was higher, and paperboard and the building grades, paper and board, were lower, the brunt of the drop being borne by paperboard and building production. Paperboard production was more than 500,000 tons lower in the first quarter of 1952.

In the first half of 1952, the supply demand situation eased in the major raw materials used by the paper industry. The easing in woodpulp supplies was recognized by the National Production Authority in revocation of some distribution, consumption and inventories regulations.

That the supply-demand situation in waste paper has been characterized by abundance on the supply side was clear for some months to those who have followed the statistics of this raw material shown.

PRINCIPAL INFORMATION About United States Industry

Our information indicates these totals for the number of companies and mills in the U. S., compiled with assistance of the American Paper and Pulp Associa ion:

Co's Paper Pulp
FOO FOO 040
522 723 249
517 735 242
560 758 241
570 768 245
565 764 255
572 767 259
530 769 278
5

Year	Wage Earners	Wages Paid	Industry Worth		
1849	6,785	\$1,497,792	\$7,260,864		
1869	18,021	7,208,691	34,556,014		
1889	31,050	13,204,828	89,829,548		
1899	49,646	20,746,426	167,507,713		
1909	75,978	40,804,502	409,348,505		
1919	113,759	135,690,642	905,794,588		
1929	128,049	173,077,781	1.250,000,000		
1939	137,445	175,687,842	1,700,000,000		
1943	150,000	299,000,000	1,990,000,000		
1946	167,000	366,000,000	2,420,000,000		
1949	198,000	614,000,000	3,590,000,000		
1950	205,000	694,000,000	*********		

Source: American Paper and Pulp Association.

U. S. INDUSTRY GROWTH (In Millions of Tons)

	1951	1950	1939
Woodpulp production	16.5	14.8	7.0
Woodpulp consumption	17.7	16.5	8.7
Waste paper consumption	9.1	7.9	4.4
Paper and board production	26.1	24.3	13.5
Woodpulp imports	2.4	2.4	2.0
Newsprint impor s	5.0	4.9	2.6

As for pulpwood consumption, it totaled 10.8 million cords in 1989, compared to 23.7 in 1950, and 26.6 in 1951.

UNITED STATES PULP AND PAPER INDUSTRY STATISTICS

	In B	illion of Dol	lars	In A	Aillions	No. Employes	Tons Per	Wages Per Pr	Unit
		Net Worth				Thousands	Employe	TonPer	Man Hr.
1939	\$2.36	\$1.70	\$1.45	\$49	\$176	138	98	\$13.0	100.0
1942	2.68	1.92	2.46	265	284	164	104	16.6	101.9
1945	2.97	2.13	2.88	214	352	159	109	20.2	99.1
1948	4.68	3.34	5.38	346	612	205	107	27.7	111.1
1949	4.89	3.59	4.79		614	198	103	30.2	115.7
1950	5.59	4.08	5.89		694	205	119	28.6	125.0
Last v	ear for	anhich data	ie anai	lable					

BASIC U. S. PRODUCTION AND CONSUMPTION DATA

WOODPULP

	PA	PER		PULPWOOD		
		Consumption		For Paper		Consumption
	(tons)	(tons)	(tons)	Only (tons	etc.,—tons)	(cords)
1899	2,167,593	2,158,000	1,179,525	1,216,254		1,986,310
1909	4,216,708	4,224,000	2,495,523	2,856,593		4,001,607
1919	6,190,361	6,479,490	3,517,952	4,113,911		5,477,832
1929	11,140,235	13,347,925	4,862,885	6,704,341		7,645,011
1934	9,186,266	11,185,682	4,436,128	5,969,633		6,796,659
1938	11,327,000	13,488,300	5,933,560	7,975,000		9,193,991
1942	17,083,862	19,608,862	10,783,430	11,038,020		17,204,000
1946	19,277,667	22,509,788	10,605,225	12,092,093	12,605,093	17,817,560
1948	21,897,301	26,082,093	12,872,292	14,374,586	15,034,586	21,189,458
1949	20,315,436	24,694,482	12,171,786	13,606,387	14,181,387	19,949,440
1950	24,377,222	29,013,060	14,810,860	16,483,201	17,183,201	23,627,000
1951		30,609,822	16,494,000	17,704,000	18,480,000	26,576,000

Source: American Paper and Pulp Assn.

Source: American Paper and Pulp Assn.

PRODUCTION WORKERS AND WAGES IN U. S. PULP, PAPER AND ALLIED PRODUCTS INDUSTRIES

Year					Average number of wage earners (Thousands)	Total dollar wages (Millions)
1899.					94	36
1909.	ì			Ì	145	68
1919.					203	208
1929.					229	281
1939.					265	310
1949.					382	1.112
1950.					404	1,284
1951.					420	1,436

Source: U. S. Bureau of Labor Statistics. Source of data prior to 1939: Bureau of Census.

AVERAGE HOURLY EARNINGS U. S. PULP AND PAPER INDUSTRY VS. U. S. FACTORY AVERAGE

		Pulp and paper Hourly earnings	U. S. Factory Hourly earnings
Iune	1939	\$.618	\$.631
	1941	.716	.732
	1943	.851	.959
	1945	.906	1.038
	1947	1.232	1.244
	1947	1.289	1.245
	1948	1.369	1.340
June			1.405
	1950	1.466	1.453
	1950	1.573	1.543
	1951	1.599	1.599
Doc	1051	1 634	1.636

Source: U. S. Bureau of Labor Statistics

VALUE OF SALES IN U. S. INDUSTRY AND BY WHOLESALERS

Year	By Pulp, Paper, Board and Products Industries Millions of dollars	By Wholesale Distributors of Paper and Its Products Millions of dollars
1939	\$1.785	\$575
1941	\$2,836	\$739
1943	\$3,389	8833
1945	\$3,725	\$909
1947	\$5,764	\$1.828
1948	\$6,066	\$1,902
1949	\$5,448	\$1,723
1950°	\$6,671	\$2,013
1951	\$8,098	\$2,400
	** 0 5	

^o Estimate. Source: U. S. Dept. of Commerce.

Average All-Industry Pay For Pulp and Paper Workers

While there are some variations in different regions of the country, usually parallelling higher or lower living costs, the pulp and paper industry employes of the United States now are earning virtually the same rate of pay as all factories or industrial plants, according to the U. S. Department of Labor.

However, up to 1947, the average in this industry was slightly behind the all-industry average. It could not keep up before that with favored war industries and "cost-



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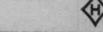
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MORAYEC

More than 200 Seveen Vots in Largest Western Mills Equipmed with Classess Burn and Moraver Fasteners



CLAUSEN BARS

ELIMINATES DIRT, INSURES POSITIVE HOLDING OF PLATES

plus" industries. This industry went ahead. But now the comparison has levelled off again as for 1951. In December 1951 the average pulp and paper worker received \$1.63 an hour.

Discussion of Pulp Situation for Consumers

The easing of government controls in the pulp markets were very much in the making as this WORLD REVIEW went to press. This was good news for the Association of Pulp Consumers, representing the non-pulp producing paper mills.

Karl A. Clauson, executive secretary of the association, in fact, should be accorded some recognition for having foreseen this prospect at the 1952 paper week. In the light of events in the winter, this

was his forecast:

"During 1952 the supply of market pulp is expected to once again catch up with demand. The first stage in this development will, in all probability, be indicated by the elimination of the top tier of the present triple price structure. By the end of the year it is expected that a single competitive price will prevail in most grades.

"We look forward in 1952 to the modification, and in some cases removal, of the government controls which have been restricting the free operation of the supply-demand equation in the market pulp

field."

Mr. Clauson wrote in his 1952 review: "The inability of the non-integrated mills to keep up with the record breaking pace set by the integrated mills during the year was due primarily to one factor—the world shortage of wood pulp.

"In order to deal with the problems arising from this acute world shortage and equitably apportion the available supply of market pulp, the United States

YOUR INDUSTRY NEVER STOPS GROWING

Peunds 300 Peunds 300 400 300 200 100

The sawteeth line shows the actual demand. The straight line is the steady upward "trend" or "average" line. Figures at the side are pounds of paper used per capita in the United States. This chart was prepared by the American Paper & Pulp Association.

1935

1940

LOUISIANA IS NO. 1 PAPER STATE

Congratulations to the State of Louisiana!

It isn't official, but it is certainly very strongly indicated by a study of available statistics that the "Pelican State" has very quietly usurped the No. 1 spot as the leading papermaking state of the U.S.A. from New York.

New York had held the leadership since the early 1900's and before that, for

a long time, the leader was Massachusetts.

Now Louisiana is surely the No. 1 state for paper. Washington State leads by a wide margin in both pulpwood and woodpulp. (Interesting that Pulp & Paper magazine is the only one in its field with editorial offices and staffs in both Louisiana and Washington!)

Here's why we can't say "officially" that Louisiana is first in paper, however. The New York figure for 1949 (as for all other states in the table except Louisiana and South Carolina) is an official Bureau of the Census figure for

1949, latest available for state breakdowns.

The score for Louisiana was lumped with South Carolina, Oregon, West Virginia and Vermont. This is an arbitrary action to avoid revealing production of certain individual companies. On the basis of the 1947 productions in those states, the 1949 total is then divided proportionately. This gives Louisiana a theoretical figure of 1,608,065 tons for 1949, only a trifling 2,915 tons ahead of New York.

But here's the point as we see it. The industry has been growing so rapidly in Louisiana, that we figure this may be even short of Louisiana's true figure.

New York has been sliding downward since 1947.

We are convinced that Louisiana, with its huge expanding mills at Bastrop, Springhill, Bogalusa, Monroe, Hodge, Elizabeth, Marrero and New Orleans is unquestionably well out in front today—even if it wasn't in 1949.

		I ons of Paper Produced in
Rank	State	1949-Latest Available Year
1-L	UISIANA	1,608,065
2-N	W YORK	
3-W	SCONSIN	
4-M	CHIGAN	1,350,011
5-0	по	1,252,534
6-P	NNSYLVANIA	
7—M	INE	1,183,928
8-N	W JERSEY	919,066
9-W	ASHINGTON	855,584
10-G	ORGIA	799,076
11-FI	ORIDA	
	INOIS	
13—S	UTH CAROLINA	795,032
	RGINIA	
15-M	ASSACHUSETTS	610,377
16—M	NNESOTA	556,276

Government imposed two restrictive orders on the domestic pulp and paper industry.

T---- (D---- D--1 --- 1 :-

"The first of these orders was known as CPR-49 and, in addition to setting up a tailored domestic ceiling, it imposed a ceiling price on imported Scandinavian pulp. The need for this latter provision became apparent when the Swedish producers, at the beginning of the second quarter, indicated their intention of taking advantage of the world shortage by running their prices through the roof.

"Realizing that the imposition of the ceiling price on Scandinavian pulp would temporarily divert sizable quantities of this pulp to other markets, the Government issued a second order known as M-72. This order restricted the consumption of pulp to 95% of 1950; it limited the inventories of market pulp to 45 days; and it withheld 3% of the integrated pulp production and made it available as market pulp.

"Both orders appeared to function smoothly with a minimum of unnecessary hardship being imposed on any individual

(Continued on Page 54)

1920

1925

Source: U.S. Bureau of the Consus

1930

1945

1950

U. S. Woodpulp Capacities Projected to Year 1955

Here's the way the U. S. Pulp Producers Assn Inc. recently projected woodpulp capacities of the major regions of the United States—to the year 1955. This year's capacities are also given.

REGION (U.S.)	Annual C Woodpulp - 1952	apacities In Tons 1955
New England Mid-Atlantic Lake States	1,955,225 1,304,383 2,360,087	1,975,030 1,307,549 2,494,784
Pacific Coast South TOTAL	3,292,187 9,945,952	3,749,455 11,489,351 21,016,160

NORTH AMERICA—WOODPULP— 1952 AND 1954

Projected by U. S. Pulp Producers Assn Inc.

	Capacity rt Tons
1952	1954
28,912,238	31,322,973
1,222,491	1,631,196
4,855,388	4,912,930
2,334,442	2,428,862
10,671,741	12,056,451
3,288,149	3,648,924
	2,291,811
8,526,262	8,756,962
1,417,771	1,430,821
229,872	242,802
	In Sho 1952 28,912,238 1,222,491 4,855,388 2,334,442 10,671,741 3,288,149 1,988,713 8,526,262

**Breakdown of total: U.S., 18,857,834 in 1952; 20,874,169 in 1954.

**Canada, 10,054,404 in 1952; 10,448,804 in 1954.

**About % in dissolving is U.S.; over half in sulfite; over 80% of sulfate. Most groundwood is Canadian.

U. S. WOODPULP EXPORTS

	Tons	Value
1951	195,955	\$39,516,082
1950	95,693	\$12,056,311
1949	122,133	\$14,082,575
1946	39,361	\$ 3,645,963
1943	300,700	\$20,288,879
1940	480,938	\$29,736,737
1939	139,504	\$ 6,493,140
1935	171,710	\$ 8,632,971
1930	48,426	\$ 2,070,553

Source: U. S. Department of Commerce and U. S. Pulp Producers Assn.

TOTAL UNITED STATES PRODUCTION OF WOODPULP

Total	Unbleached Sulfite	(Tons of 2 Bleached Sulfite	2000 pounds) Total Sulfate (1)	Groundwood	Soda	All Other
3.962.217	790.510	612.576	409,768	1.612.019	472.647	64,697
4,925,669	634.947	944,620	1.467.749	1,355,819	417,724	104,810
	995.700			1.632.727	532,387	438,664
				1.869.862	462,065	782,965
10.108.443					412,755	991,442
10,606,527					476.211	1.114.376
12.872.292			6.013.696		509,864	1,362,409
12,171,786	707.263	1.829.021	5.977.281	1.960,496	492,194	1,205,531
14.807.575	740.895	2.107.541°	7.501.429	2,215,883	522,221	1.719,606
16,494,386	754,916	2,378,692°	8,576,298	2,476,635	446,483	1,861,362
	3,962,217 4,925,669 8,959,559 10,783,430 10,108,443 10,606,527 12,872,292 12,171,786 14,807,575	Total Sulfite 3,962,217 790,510 4,925,669 634,947 8,959,559 995,700 10,783,430 1,213,066 10,108,443 862,928 10,606,527 784,391 12,872,292 901,814 12,171,786 707,263 14,807,575 740,895	Total Unbleached Sulfite Sulfi	Total Sulfite Sulfite Sulfite (1) 3,962,217 790,510 612,576 409,768 4,925,669 634,947 944,620 1,467,749 8,959,559 995,700 1,612,089 3,747,992 10,783,430 1,213,066 1,717,206 4,738,266 10,108,443 862,928 1,523,221 4,548,810 10,606,527 784,391 1,929,077 4,758,016 12,872,292 901,814 1,909,402 6,013,696 12,171,786 707,263 1,829,021 5,977,281 14,807,575 740,895 2,107,541* 7,501,429	Total Unbleached Sulfite Bleached Sulfite Total Sulfate (1) Groundwood 3,962,217 790,510 612,576 409,768 1,612,019 4,925,669 634,947 944,620 1,467,749 1,355,819 8,959,559 995,700 1,612,089 3,747,992 1,632,727 10,783,430 1,213,066 1,717,206 4,738,266 1,869,362 10,108,443 862,928 1,523,221 4,548,810 1,769,287 12,872,292 901,814 1,909,402 6,013,696 2,175,107 12,171,786 707,263 1,829,021 5,977,281 1,960,496 14,807,575 740,895 2,107,541* 7,501,429 2,215,883	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$

Source: U. S. Bureau of the Census.

Note: Through 1939, "exploded" wood pulp is included in Groundwood and thereafter in "All Other."

1933 through 1936 data on Soda are estimated from United States Bureau of the Census combined data for Soda and Semichemical pulp.

Includes dissolving grades of bleached sulfate.
 (1) Total sulfate lists total for paper grades only.

U. S. WOOD PULP-TOTAL

All Grades	1950 Shor	rt Tons 1951	% Change 1951 cf. 1950
Capacity Production	16,166,693 14,807,575	17,687,662 16,494,386	± · 11
Imports	2,385,181	2,375,330	- 0.4
Exports New Supply	95,673 17,097,083	196,000 18,673,716	+105 + 9
Consumed	17,164,981	18,483,944	+ 8
In paper & board In non-paper	16,469,981 695,000	17,703,944 780,000	‡ 1 ²
Inventory Dec. 31	490,645	611,279	+ 25
At pulp mills	82,232	97,732	+ 19
At paper & board mills	408,413	513,547	+ 26

MARKET WOOD PULP IN U. S.

	Shor	t Tons	% Change
All Grades Production	1,646,788	1,897,931	1951 cf. 1950 + 15
Imports Canada Europe	1,910,917 1,242,771 668,146	1,859,342 1,376,541 482,801	- 3 + 11 - 28
Exports New Supply	95,673 3,462,032	196,000 3,561,273	+105 + 3
Consumption In paper &	3,570,478	3,490,232	- 2
board In non-paper	2,904,478 666,000	2,740,232 750,000	- 6 + 13
Inventory Dec. 31 At pulp mills	340,248 9,444	419,829	+ 23 +158
At paper & board mills	330,804	395,480	+120
Sauces II & Pul	a Producers .	Acces Inc.	

U. S. PULP IMPORTS

Chemical Tons	Vylue	wood Tons	Value		
2.046.311	\$324,280,192	321,178	\$26,414,059		
2.098,667	\$224,358,923	286,308	815,802,852		
1.554,320	\$168,910,921	208,782	\$12,099,373		
2,016,153	\$238,126,318	290,514	\$18,032,673		
1,526,647	\$106,858,690	227,418	\$ 8,936,177		
1,053,057	\$ 55,474,094	170,909	\$ 4,712,649		
2,049,722	\$ 78,785,004	227,778	\$ 4,051,224		
1,530,985	\$ 73,962,977	299,256	\$ 7,146,290		
1,332,522	\$ 73,317,337	331,092	\$ 8,517,116		
	7083 2,046,311 2,098,667 1,554,320 2,016,153 1,526,647 1,053,057 2,049,722 1,530,985	Tons V ₁ /we 2,046,311 \$324,280,192 2,098,667 \$224,358,723 1,554,320 \$168,910,921 2,016,153 \$238,126,318 1,526,647 \$106,858,690 1,053,057 \$55,474,094 2,049,722 \$78,785,004 1,530,985 \$73,962,977	Chemical Tons Vylue uood Tons 2,046,311 \$324,280,192 \$21,178 2,096,667 \$224,338,223 286,308 1,554,320 \$168,910,22 208,182 2,046,133 \$328,126,481 227,418 1,053,057 \$5,5474,004 170,009 2,040,722 \$78,785,004 227,778 1,530,985 \$73,062,077 290,256		

Source: U. S. Pulp Producers Assn. and U. S. Dept. of Commerce.

CONSUMPTION OF WASTE FIBROUS MATERIALS BY U.S. MILLS

(In Thousands of Tons)

	Waste Paper	Rags	Straw, Flax and Other	Total
1939	4,366	468	692	5,526
1944	6,859	428	957	8,245
1945	6,800	414	929	8,143
1946	7,278	403	980	8,660
1947	8,009	462	1,064	9,535
1948	7.649	425	1.075	9,149
1949	6,600	382	833	7,815
1950	7,956	442	998	9,395
1951	9,070	389	1,055	10,523

Source: Pulp and Paper Sec., Forest Products Div., Office of Domestic Commerce and NPA, Pulp, Paper, and Paperboard Div.

UNITED STATES-WOODPULPS-BASIC DATA ACCORDING TO GRADES

Arranged by PULP & PAPER from U. S. Pulp Producers Assn. Inc. statistics—this table shows 1951 Production and Percentage Gain or Loss compared with 1950—all important grades

	Dissolving & Special Tons % Change	All Paper Grades Tons % Change	Sulfite (Paper Grades) Tons % Change	Bleached Sulfite (Paper Grades) Tons % Change	Unbleached Sulfite Tons % Change	Ground Wood Tons % Change
Capacity*	616,888 + 29	17.070.774 + 9	2,609,017 + 1	1.954.686 + 5		2.956,356 + 3
Production	616,802 + 29	15.877.584 + 11	2.516.806 + 6	1.761.890 + 8	754.916 + 2	2,476,635 + 12
Imports	230,088 - 3	2.145,242 - 0.1	911,980 - 2	349,115 - 13	562,865 + 7	316,966 + 14
Exports	31,000 + 12	165,000 +143	86,000 + 68	44,000 +140	42,000 + 28	0 -
New Supply	815,890 + 18	17.857.826 + 9	3,342,786 + 3	2,067,005 + 3	1,275,781 + 3	2,793,601 + 12
Consumption	779,315 + 12	17,704,629 + 7	3,264,422 - 1	2,058,411 + 0.4	1,206,011 - 4	2,775,084 + 11

* In dissolving grades, no. maximum, apportioned capacity with paper grades. In bleached and unbleached grades, capacity is listed under bleached for maximum bleaching.

¹ Both sulfite and sulfate.

	Sulfate Paper Grades Tons % Change	Sulfate-Paper Fully Bleached ^a Tons * % Change	Sulfate Unbleached Tons % Change	Soda Tons & Change	Semi-Chemical Tons % Change	Defibrated & Exploded Tons & Change
Capacity	8,710,956 + 14	2,373,099 + 14		460,820 15	897,755 + 12	1,382,525 + 21
Production	8,576,298 + 14	1,879,181 + 33	6,382,227 + 12	446,483 - 15	743,558 + 23	968,660 - 0.4
Imports	868,100 - 3	532,527 + 18	308,364 - 25	33,373 - 2	0	0 -
Exports	76,369 +435	9,782 + 108	66,500 +596	631 +952	0 -	0 -
New Supply	9,368,029 + 12	2,401,926 + 29	6,624,091 + 8	479,225 - 14	743,558 + 23	968,660 - 0.4
Consumption	9,302,924 + 11	2,356,051 + 28	6,595,614 + 8	493,176 - 13	744,378 + 23	969,649 - 0.3

² In addition, 314,000 tons of sulfate was semi-bleached, a decrease of 16%; 27,000 tons imported, 351,259 consumed.

TOTAL PAPER PRODUCTION IN UNITED STATES BY GRADES (Tons of 2,000 lbs.)

Year	Newsprint	Book	Groundu ood	Fine	Wrapping (Coarse)	Tissue	Sanitary	Absorbent	Building Paper	Other Paper	Total All Paper	Total Paper and Board
1899	569,121	304,459	*	131,456	535,252	28,406	•	*	•	*204.697	1.773,482	2,167,593
1924	1,481,425	1,050,000	*****	422,000	1,235,000	242,000		•	*	°649,560	5,079,985	7,929,985
1940	1,056,304	1,655,423	550,453	735,753	2,500,818	733,894		129,410	682,460	60,120	8,104,635	14,483,709
1945	725,475	1,501,015	636,026	1,000,794	2,403,182	157,083	823,705	88,643	883,259	238,047	8,457,229	17,370,955
1948	875,760	3.15	3,999	1.140.859	3.026.699	205.095	982,692	107,305	1,321,431	307.690	11.118.530	21,897,301
1949	917,778		8,222	1.014.954	2,757,731	186,667	1.008,162	86,113	1.151.374	247,893	10,348,894	20,315,436
1950	1,013,346	3,30	02,861	1.198,574	3,285,635	225,199	1.148.351	126,690				24.377.222
1951	1,106,086	3,52	25,537	1,364,029	3,597,144	270,138	1,215,258	124,412	1,400,658	419,036	13,022,298	26,086,115
1951	1,106,086	3,52		1,364,029	3,597,144	270,138	1,215,258	124,412				20

ry and building papers are included in "Other Paper." Beginning in 1948, groundwood included with

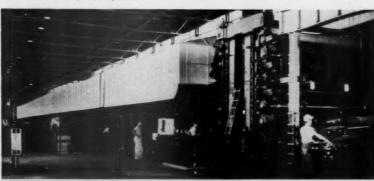
Source: American Paper and Pulp Assn.

U. S. PAPER PRODUCTION, IMPORTS, EXPORTS, AND CONSUMPTION (All Grades—in tons of 2,000 lbs.)

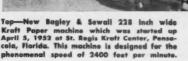
Consumption

Year	Production	Imports**	Exports**	Tons	Lbs/Capita		
1899	2,167,593	******		2.167.593	57.9		
1909	4,121,495	55,962	74,764	4,102,693	90.5		
1919	5,966,076	707,548	420,540	6.253.084	119.1		
1929	11,140,235	2,533,603	262,383	13,411,455	220.3		
1939	13,509,642	2,687,484	248,569	15.948.557	243.7		
1942	17,083,862	3,038,499	341,920	19,780,441	293.8		
1945	17,370,965	2,753,211	458,689	19.665.487	281.7		
1948	21,897,301	4.581.811	397.019	26.082.093	355.9		
1949	20,315,436	4,751,323	372,277	24,694,482	331.0		
1950	24,377,222	5,007,384	371.546	29.013.060	382.5		
1951	26,086,115	5,158,010	634,303	30,609,822	396.6		

** Quantities estimated, wholly or in part, from values given. Imports and exports for various grades include 'Paper Products. Source-American Paper & Pulp Assn.









-Pusey & Jones Corp. built this 236 Inch high speed Yankee Fourdrinier machine for Hudson Pulp & Paper Corp.'s Southern Division at Palatka, Fla. Will make 180 tons a day of 25-30 lb. paper. Is second big P-J machine for

mill. By the end of the year it was generally felt that these orders had served their purpose and should gradually be relaxed.

Pulp Expansion

Continued Mr. Clauson:

"As a result of the fiber shortage and the growing feeling that overseas sources could not always be depended on, a num-ber of new market pulp expansion projects were initiated in the United States and Canada during the year. These projects, some of them aided by the issuance of Certificates of Necessity, are expected to be in operation during 1953-54.

"The announced projects which are pected to contribute to the total available supply of market pulp, together with the approximate new capacity are as follows:

		Capacity
Buckeye	(n)	70,000
Celanese	(n)	130,000
Celanese	(x)	35,000
Elk Falls	(n)	80,000
Gaspesia	(c)	60,000
Ketchikan	(n)	120,000
MacMillan	(x)	80,000
Natchez	(x)	80,000
Olin	(n)	80,000
Rayonier	(n)	100,000
Rayonier	(x)	40,000
St. John	(x)	40,000
Weyerhaeuser	(n)	70,000
Total		985,000

Total

(n) New Mill (x) Expansion (c) Conversion

"Included in the above total is approximately 655,000 tons of new dissolving pulp capacity. To the extent that the demand for dissolving pulp does not absorb all of this new dissolving capacity, it will find a ready market as paper grade bleached pulp.

"In addition to the above projects there are several integrated projects which will, in effect, be equivalent to market pulp by displacing existing demand on the market pulp supply.'

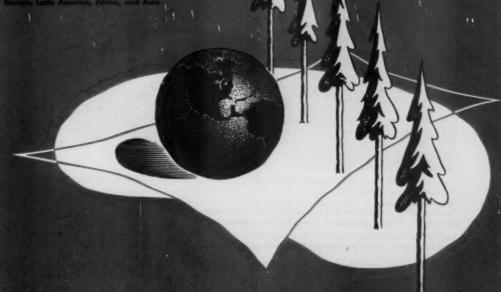
(Continued on page 148)

See Page 3 for conversion factors to help you in using this WORLD RE-VIEW: How to transpose Metric Tons to Short Tons and vice versa; Cords to Meters, etc.

this mill in just four years. Has General Electric electronic Amplidyne multiple generator sec-tional drive—driven by over 2000 hp. of DC motorsi At lower right, dryer sections with ex-tensive Ross air system.

WOOD PULP PAPER

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☆ CANADA

NORTH AMERICA

PAST - FUTURE

New Canadian Records In Pulpwood, Pulp and Paper Nine New Mills Planned in British Columbia, Alberta

Canada Population-13,845,000. Annual per capita consumption of paper-260 lbs.

CANADA-PULP PRODUCTION

(Tons of 2,000 lbs.)

	Mechanical Tons	Sulfite Tons	Alkaline Tons	Total Tons
1920.	1,090,114	654,273	188,487	1,922,774
1925.	1,621,917	842,785	242,207	2,706,909
1930.	2,283,130	1.076,804	188,253	3,548,187
1935.	2,458,000	1.025,000	206,000	3,689,000
1940.	3,305,484	1,480,545	399,267	5,290,762
1945.	3,341,920	1,639,684	478,740	5,460,344
1946.	3,997,848	1,830,017	562,233	6,390,098
1947.	4,275,269	2.027.532	689,435	6,992,231
1948.	4,413,513	2,138,011	815,076	7,366,600
1949.	4,718,806	1,991,459	855.784	7,566,049
1950.	4,910,803	2,110,773	1.053.588	8,075,16
1951	5.125.000	2,530,000	1.215.000	8.870.000

Dominion Bureau of Statistics exc. 1951, estimated by Daily Mill Stock Reporter. Newfoundland has been in-cluded, beginning in 1949 when it joined Canada.

The industry achieved new peaks of accomplishment in Canda in 1951, and the present year is witnessing a continuance of the buoyant expansion trend that has been prevalent since the end of World

Canada's output of all grades of pulp and paper increased materially, gross tonnage of all products being 9,600,000 tons, an advance of 9% in physical volume over the previous year. Gross value of output was estimated at \$1,200,000,000. Virtually every branch of the industry was operating at virtual capacity levels and significant of the overall gains was the fact that Canada became the world's leading exporter of pulps in 1951. Canada's newsprint exporters have held that distinction for a good many years, the nation's production of news grades being in excess of that of all other countries combined.

Canada's pulp and paper exports altogether were valued at about \$900,000,000, representing nearly one quarter of all Canada's exports and 35% of all Canada's exports to the U.S.

The present year brought new challenge to the industry, for there was evidence of weakness in world pulp markets, especially for the unbleached grades, and operators were faced with steadily rising costs, increased taxation and other problems. Some pulp mills curtailed production to some extent and while newsprint levels were still high exporters had a new difficulty resulting from the rise of the Canadian dollar which arbitrarily wiped out their exchange premium in sales to the U.S. But an increase generally in newsprint price in May to \$126 ended this loss, though it brought a storm of protests from publishers across the line. Newsprint, as a world commodity, is discussed in another section of this review. It is, of course, Canada's No. 1 industry and

The tax problem was emphasized by one company president when he reported that to retain \$1 of earnings in the business it was necessary to earn \$2.11 (the difference being required for taxes).

Between 1950 and 1955, new investment in pulp and paper mills in Canada will exceed \$600,000,000, which in dollar terms is 70% greater than the growth of the industry during the previous five years and in volume about 35% greater than in the postwar period, according to an analysis of Robert M. Fowler, president of the Canadian Pulp and Paper Association, who predicted that by 1955 the capital value of the industry would be about \$1,750,000,000

Total woodpulp production in Canada in 1951 exceeded 9,100,000 tons, up 7%; about 77% of the 1951 output of pulp and paper was exported. More than 6,800,000 tons of the pulp produced was converted into paper, paperboard and other products in Canada. The newsprint mills produced more than 5,500,000 tons, up 4%, chiefly due to speeding up of installed capacity.

The industry made important advances from coast to coast, but most new construction in the west.

Expansion in British Columbia

For British Columbia the past year has been one of continuing expansion, with most of the established mills making important improvements, one new mill under construction and several new projects in the planning stage.

One of the industry's biggest undertakings in Western Canada promises to be

PRINCIPAL STATISTICS OF CANADIAN PULP AND PAPER INDUSTRY

Year	Establish ments	Capital	Em- ployees	Salaries and Wages	Fuel and electricity used	Materials and supplies used	Gross Value of products
	No.	8	No.	8	8	.8	8
1919	99	275,767,364	26,647	32,264,208	12,503,197	54,084,801	137,912,502
1925	114	460,397,772	28,031	38,560,905	17,506,735	76,514,990	193,092,937
1931	103	630,176,540	26,669	34,792,013	22,927,919	63,947,678	174,733,954
1937		570,352,287	33,205	48,757,795	29,121,065	91,121,629	226,244,711
1943		667,458,143	37,020	71,199,422	36,211,064	143,956,462	345,653,470
1948		1,100,000,000	51,924	151,662,761	41,365,665	274,553,791	825,857,664
1949		1,100,000,000	52,050	157,703,868	41,370,633	272,681,606	836,148,393
1950		1,150,000,000	52,343	169,246,531	44,440,376	289,548,301	954,137,651
1951°	127	1,200,000,000	53,000	170,000,000	45,000,000	290,000,000	900,000,000

[°]Estimated

CANADIAN PAPER PRODUCTION

	Newsprint		Total	Paper
	Tons	\$ Value	Tons	\$ Value
1917	689,847	38,868,084	853,689	58,750,341
1929	2,725,331	150,800,157	3.197.149	192,989,252
1932	1.919,205	85,539,852	2,299,767	114,115,570
1941	3,519,733	158,925,310	4,524,776	241,450,292
1945	3,324,039	189,023,736	4,359,576	282,837,614
1948	4,640,336	402,099,178	6,063,646	582,346,000
1949	5,187,206	467,976,343	6,539,969	641,459,838
1950	5,318,988	506,968,207	6.812.035	710,153,826
1951°	5,325,000	510,000,000	6,900,000	712,000,000

Source: Dominion Bureau of Statistics.

CANADIAN PULPWOOD

Year	Production	Consumption	Exports	Imports
1921	3.273.131	2.180.578	1.092.522	
1925	5.092,461	3.668.959	1.423.502	
1930	5.977.183	4.741.349	1.330.466	94.632
1935	6,095,016	5.005.083	1.109.873	19,940
1940	8,499,922	6.996.119	1.551.429	47.626
1945	9,145,673	7.478.508	1.671.298	4.133
1946	10.523,256	8.684.756	1.855.381	16.881
1947	11.484.522	9.551.050	1.983.980	50,508
1948	12,497,926	10.256.549	2.317.346	75,969
1949	11,850,254	10,237,976	1.612.278	5,491
1950	12,873,476	11.138.578	1.734.898	28.220
1951°	13,124,300	12,012,200	1,800,000	4,000

Imports not reported prior to 1928. Source: Dominion Bureau of Statistics.

^{*} Estimated by PULP & PAPER.



PARCHMENT PAPER IS BEING MADE at the Espanola, Ont., mill of the KVP Co. Ltd., shown here, for the first time this year. Canadian division of Kalamazoo Vegetable Parchment Co. has been extensively remodelled and improved during the past five years. First Swenson acid evaporater in Canada, a Pusey & Jones 86 in. parchment machine and Louis Allis crive for it are new installations.



BOWATER'S NEWFOUNDLAND MILL at Corner Brook, Nfd., where \$4,000,000 is being spent to increase suffite operation through additional digester capacity, new Sherbrooke machinery (impco) washing-screening equipment, Jonsson (Bird) knotters by Canadian ingersoil Rend. Dominion Engineering Co. is putting in a Cram condensate system.

that of Celgar Development, Ltd., a subsidiary of Celanese Corp of America, which has applied for a forest management license covering nearly 3,000,000 acres in the Arrow Lakes district and is proceeding with a \$65,000,000 program involving construction of a 400 ton bleached sulfate mill and a 275 ton groundwood mill at Castlegar.

The original British Columbia subsidiary of Celanese, Columbia Cellulose Co., which completed a \$27,000,000 high alpha pulp mill near Prince Rupert last year, is currently boosting production there to 300 tons daily through installation of a sixth Dominion Bridge Co. digester and a new circulation and hot acid system

by Chemipulp Process Inc. and other facilities.

The Castlegar project would be the first in the industry for the interior of the province, all present operating mills being on the coast. However, three more mills will be built in the hinterland if the announced plans of Western Plywood Co., Westminster Paper Co. and Kootenay Forest Products materialize.

Western Plywood Co., which operates plywood plants at Vancouver and Quesnel in the Cariboo district, has applied for a license which would provide for sustained yield management over an extensive forest area near Quesnel and if this is granted by the government it will go ahead with the building of a \$200,000,000 bleached sulfate pulp mill at that town, which is located on the Fraser River near the heart of the famous Cariboo gold country.

Westminster Paper Co., which operates a tissue and specialty paper mill at New Westminster, affiliated with Pacific Coast Paper Mills of Bellingham, Wash., was assured license covering a forest area between Prince George and Quesnel and plans a pulp mill near the former town in partnership with an industry group. Output of this proposed \$25,000,000 300 ton bleached sulfate mill would be shipped to the paper mill in New Westminster over the Pacific Great Eastern Railway, which is now being extended from Quesnel north to Prince George, and east by Canadian National.

(Continued on Page 172)

CANADIAN PAPER PRODUCTION BY PROVINCES

(Quantity in Tons-Value in Dollars)

	Quebec	Ontario	British Columbia	Other Provinces	TOTAL
1945 Tons	2,292,442	1,267,796	334,502	464,836	4,359,576
1945 Value	\$148,180,691	\$86,395,223	\$20,353,984	\$27,907,716	\$282,837,614
1948 Tons	3,240,623	1.837.510	425,104	560,409	6,063,646
1948 Value	\$303,691,283	\$187,182,675	\$40,317,091	\$51,155,793	\$582,346,842
1949 Tons	3,222,063	1,817,933	471,619	1,028,354	6,539,969
1949 Value	\$310,752,857	\$189,616,876	\$46,478,981	\$94,611,124	\$641,459,838
1950 Tons	3,315,631	1.903.721	498,286	1.094.397	6.812.035
1950 Value	\$339,748,513	\$211,416,005	\$52,845,416	\$106,143,892	\$710,153,826
1951 Tons*	3,420,000	2,000,000	494,000	1.120,000	7.034.000
1951 Value *	\$345,000,000	\$215,000,000	\$55,000,000	\$110,150,000	\$725,150,000

Source: Dominion Bureau of Statistics.

* Estimate by Pulp & Paper.

CANADIAN WOODPULP PRODUCTION BY PROVINCES

(Quantity in Tons-Value in Dollars)

	Quebec	Ontario	British Columbia	Other Provinces	TOTAL
1945 Tons	2,887,176	1,468,682	520,571	724,385	5.600.841
1945 Value	\$114,197,036	\$62,596,260	\$21,998,381	\$33,081,445	\$231,873,122
1948 Tons	3,902,072	2,226,124	688,209	858,674	7,674,079
1948 Value	\$227,425,545	\$153,870,832	\$49,220,655	\$55,449,132	\$485,966,164
1949 Tons	3,698,401	2,138,444	666,542	1,349,611	7.852,998
1949 Value	\$196,568,691	\$140,662,434	\$36,737,722	\$71,169,647	\$445,138,494
1950 Tons	3,922,543	2,297,518	776,896	1.476.067	8.147.014
1950 Value	\$216,299,900	\$156,390,753	\$49,381,923	\$80,511,349	\$502,583,925
1951° Tons	4,200,000	2,355,000	962,787	1.610.000	9.137.000
1951° Value	\$244,000,000	\$175,000,000	\$65,000,000	\$88,000,000	\$572,000,000

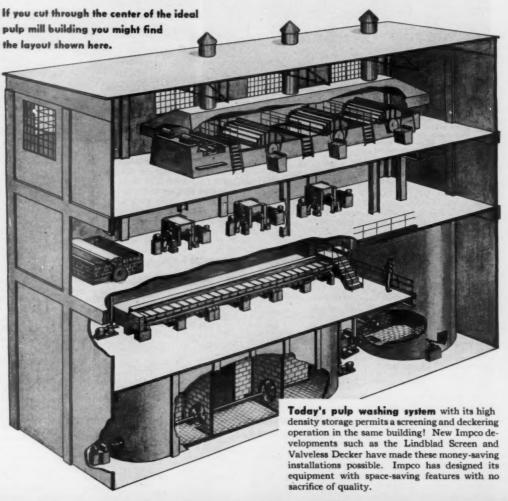
* Estimate by PULP & PAPER.

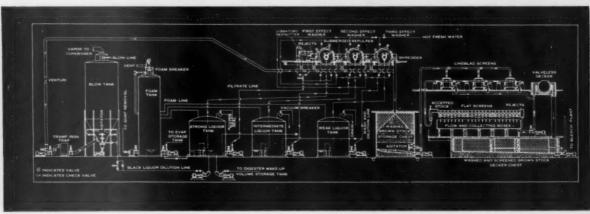
CANADA'S FOREST RESOURCES—A NEW 1951 SURVEY—Merchantable and Accessible Saw Timber (10" D.B.H. and Up)—in Millions of Feet Board Measure

	Newf dland	Prince Edward Island	Nova Scotia	New Bruns'ck	Quebec	Ontario	Manitoba	Saskat- chewan	Alberta	British Coast	Columbia Interior	All Canada
Softwood Hardwood Total All	3,127	65 40	4,849 1,261	5,000 1,500	38,181 14,019	42,775 11,529	815 1,630	580 1,010	7,000 2,080	76,108	33,630	212,130 33,069
Species	3,127	105	6,110	6,500	52,200	54,304	2,445	1,590	9,080	76,108	33,630	245,199
			S	maller Ma	iterial (4"	D.B.H.) ir	Thousand	s of Cord	5			
Softwood Hardwood Total All	31,902	560 240	23,167 5,363	60,000 30,000	450,495 176,108	261,515 300,380	9,900 19,090	3,200 50,130	74,400 36,000	13,922	172,364	1,101,425 617,311
Species	31,902	800	28,530	90,000	626,503	561,895	28,990	53,330	110,400	13,922	172,364	1,718,736

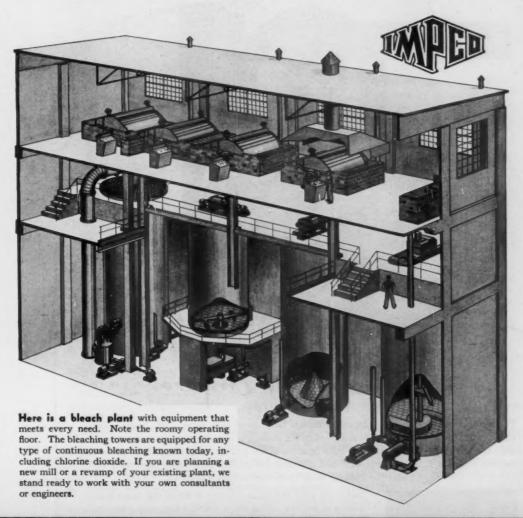
^{*} British Columbia forests contain considerable quantities of hardwood, but no complete inventory has yet been made. Survey now being carried out is expected to be finished in 1955. Source: Dominion Forest Service.

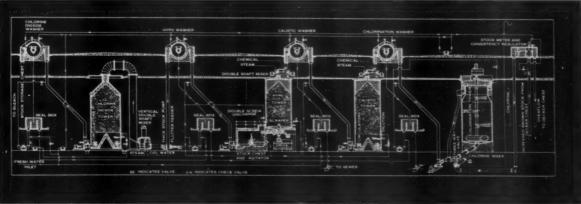
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Compact Integrated Pulp Mill







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Today the pulp and paper industry is one of the major consumers of Sulphur, taking about 400,000 long tons annually. Compounds of Sulphur are indispensable reagents in the two major cooking processes for converting wood to pulp. From the pulp come newspapers, magazines, books, boxes, wrappings and an almost endless list of other paper products.

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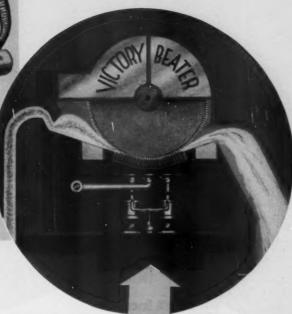
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*Name on request



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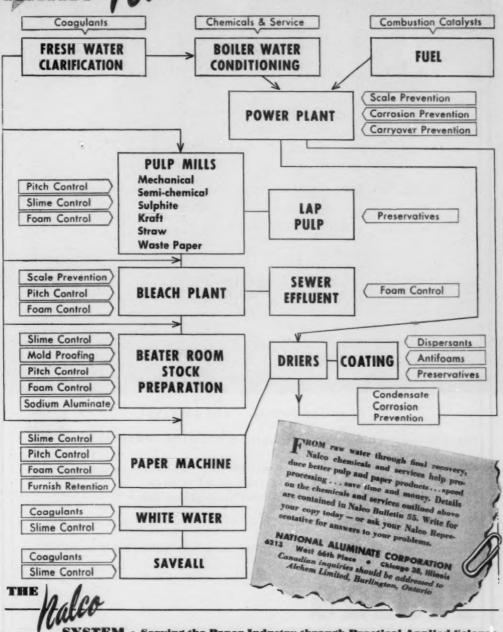
"This example, typical of many in our files, helps explain the popularity of this versatile, highly economical refiner. More than 1000 of these 'mighty mites of stock preparation' have been sold (not including those made by imitators!) since it was introduced in 1935."



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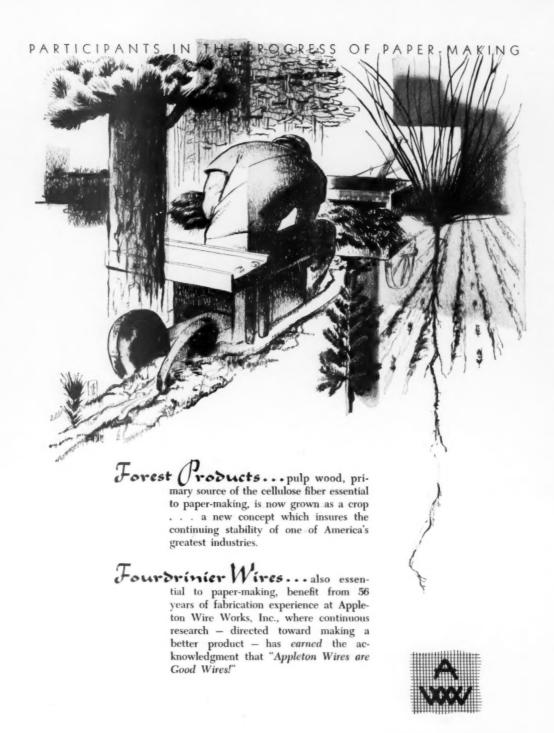
PRECISION GRINDING and polishing are reflected in the finish of this

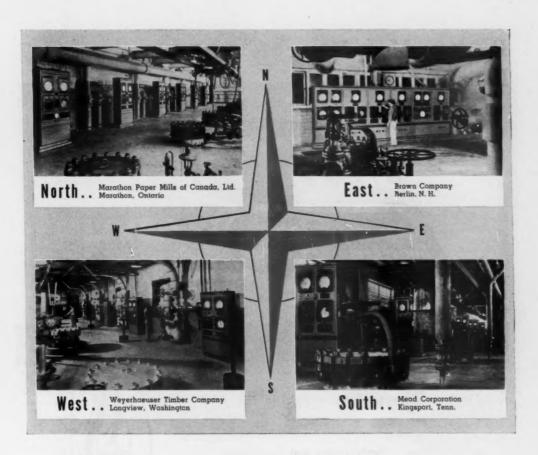
Beloit high pressure creping dryer, which C. D. ("Mac") McNabb is pointing out to Lon Neese (left), Elmer Macklem and Don Curtis (right). Improved dryer design and finest craftsmanship are characteristic of Beloit Yankee machines, known 'round the world for high-speed production of quality paper.—Beloit Iron Works, Beloit, Wisconsin.

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70

PULP & PAPER

1952 Review Number



With an Oliver "OC-3" and its hydraulic drawbar, a tractor operator can log sitting down. He simply backs to the log... drops the tongs over it... pulls the control lever that lifts the hydraulic drawbar... and moves away with the butt end of log in the air.

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SOVIET UNION STRESSES FOREST DEVELOPMENT PROGRAM

RUSSIA - - - COMMUNIST EUROPE

Population: Soviet Russia—193,000,000; Czechoslovakia — 12,463,000; Poland — 24,977,000; Rumania—16,094,000; Hungary —9,313,000; Bulgaria—7,235,000; Yugoslavia—16,250,000. Per capita consumption of paper: Czechoslovakia, 38.55 lbs.; Poland, 25.06 lbs.; Hungary, 14.29 lbs.; Rumania, 6.80 lbs.; Bulgaria, 15.81 lbs.; Russia, 13.6 lbs. (Sources: United Nations Statistical Yearbook; American Paper and Pulp Association)

Of the earth's total forest area of approximately 7,410,000,000 acres, roughly 2,717,000,000 lie within the U.S.S.R. A recent statement by V. Koldanov, deputy minister of forest economy, places the total volume of timber supplies within this area at 59,000,000,000 cubic meters—or more than twice as much as the U.S., Canada, Sweden and Finland together.

The forests of Russia extend over the Far East, Siberia and the European north, with the Krasnoyarsk territory in Siberia covering 965,250 square miles and containing 247,000,000 acres of virgin forests of larch, cedar, pine, birch, fir and spruce. It is estimated that about 60%—or over 1,500,000,000 acres—of Soviet timber areas are suitable for logging operations, and that 78% of the forests have coniferous trees suitable for lumber and pulpwood.

It is difficult to estimate the pulp and paper production from these vast resources because statistical information is practically non-existent. But following are some figures which PULP & PAPER has collected from a variety of sources which may be of value in forming a picture of these activities:

U.S.S.R. Paper and Board Production

	and bound indesting
Year	Production in tons
1937	831,000
1940	812,000
1946	556,000
1947	696,000
1948	836,000
1949	995,000
1950	1,194,000
1951	1.337.280

(Sources: United Nations Statistical Yearbook—1951; U.S.S.R. Information Bulletin; New York TIMES.)

A translation from the Swedish Wood Pulp and Timber Journal of Jan. 31, 1952, quotes from the 1951 edition of the Encyclopaedia of Greater Russia, and says that in 1913 there were 212 paper and pulp mills in Russia employing 41,200 workers—with the industry located principally in the Baltic Provinces and the area around what was then St. Petersburg (Leningrad). With the drop in manufacture occasioned by World War I and the Communist revolution, it was not until 1925 that 1913 production in the industry was matched.

Before World War II, the following mills came into production under the Soviet's program for greater capacity:



AT SOVIET RUSSIA'S PULP AND PAPER MILL in ARKHANGELSK. This photo supplied to PULP & PAPER by the USSR Information Service shows a huge cable crane houling operation. Note long-

length pulpwood in the bundle being transported by the crane. Also man on ruft and two other workers in foreground (bottom) appear very tiny in comparison to the crane.

Djersjinski mill in Balkans—newsprint —150,000 tons capacity

Kondopoga Combine by Onega Sea operating by 1929

Siass in Leningrad district—sulfite mill
—1930

Krasnovisjersk in Urals—paper mill— 1931

Metsji and Solombal sulfate pulp mills Archangel sulfite mill Marij Combine at Kasan—insulating

and other paper—1938
Segesj Combine in Karelia—sulfate

pulp mill—70,000 tons—1939 Kamski Combine at Perm,—and Solikamsk—sulfite—1939 and 1941

Zugdidi Combine in Zugdidi in Georgia

Some damage was done to these mills during World War II, but by 1948 production was back at 1940 levels, and has now almost doubled those figures (see table above). New mills have been built or are being built at Solikamsk (newsprint); Kamenogorsk (Leningrad district); Sverdlovsk (Ural); Nemansk (Tver district); Sjidatjovsk (near Smolensk); Rachovsk (Trans-Caucasia); Lwow (Lemberg in Poland); and Klaipeda (near Memel). New pulp mills have already been placed in operation at Kalinin and on Sackalin island off the east coast of Siberia.

The importance the Soviets are giving to their forestry and forest products program can be gleaned from various public FOREST AREAS OF THE WORLD—Softwood areas are in black; hardwood areas in area.

Note that all coniferous softwood timber is in the Northern Hemisphere except for small amounts in Brazil. This map was prepared by American Paper & Pulp Association. U.S. commercial forests total 461 million acres and all U.S. timber totals 470 billion acres (1,590,000,000,000 cu. ft.). Canada has 268 million acres of creasts (2,590,000,000,000 cu. ft.). Canada has 268 million acres are acres and 242 million acres inaccessible. It has 191,347 million cu. ft. of merchantable occesible timber and 119,584,000,000 cu. ft. inaccessible merchantable timber. Europe, oustide of Russia, has only 327 million acres of forests (137 million in Scandinavia).

IMPORTANT TIMBER AREAS OF THE WORLD

Assess to the description and the Assessment from \$12 finest force deli
Days. Until 1950, workers are said to be employed in the

1950 expansion goal in paper production

and 1960 expansion goal in paper production

and 1960 expansion goal in paper production

utterances, and official actions. Until 1950, the Ministry of Timber and Paper Industry was under one head. When this division reported only 93% fulfillment of its program for that year it was divided into two ministries—the Ministry of the Timber Industry, and the Ministry of Paper and Wood Processing, with the result that the latter reported 103% fulfillment for 1951 while the former still fell below expectations with 94% fulfillment.

There is a statute in the U.S.S.R. to regulate logging management and which says: "Logging operations must be mechanized. Hand implements are allowed only by permission of the respective territorial administration, primarily for selective felling, and also in mountainous terrain where the use of power saws is impracticable."

Under this regulation, the Soviets claim to have developed an electric chain saw—the TSNIME K-5—which weighs only 21 lbs. and with which some workers can cut 14 to 15 cubic feet daily. They have also developed a KT-12 skidding tractor said to haul 177 to 212 cubic feet per load and handle up to 1,775 cubic feet per eighthour shift. Mechanization of logging operations is said to be in effect to 80%.

Even with its vast timber supply, reforestation has been an important program with almost two billion seedlings reported planted in 1949-50. Much of this program has to do with shelter belts in the steppe and forest-and-steppe districts in Europe, the Ukraine, Tambov, Kursk and Stalingrad districts. Automatic tree planting machinery is said to have been used extensively in these programs.

This forestry program has significance at the present time with the recent bid of the Soviets at the International Economic Conference in Moscow in April for opening up of foreign trade with countries of the free world. M. V. Nesterov, president of the U.S.S.R. Chamber of Commerce, told the conference that if his country could place orders for machinery and equipment in Britain, the U.S., and other countries, it could make trade payment with timber, pulp and paper, ores, oil, etc.

Of the other Communist countries, Poland has re-activitated its pulp and paper industry and export trade. Some 32,000

workers are said to be employed in the industry and 30,400 tons of paperboard and products were exported in 1949. However, in turn, according to the United Nations statistical yearbook, 52,360 tons of cellulose and paper and paper products were imported during the same year. In the six years beginning with 1950, the goal of the industry is reported to be to increase its value 2½ times and double its volume of production. Poland's present largest mill is at the confluence of the Warta and Oder rivers in Kostrzyn.

Russia and Its Satellites in The Pulpwood Markets

Walker Myers, of Pulp, Paper and Paperboard Div., NPA, U.S. Dept. of Commerce, makes these observations of the influences of Russia and its Satellites, and also of Yugoslavia—a Communist country but definitely not a Soviet Satellite—upon Europe's pulpwood markets:

'Russia contributed more than one-half of the prewar movement of pulpwood to the West, and most of the remainder was supplied by Czechoslovakia, Poland, and Latvia. The virtual stoppage of Russian pulpwood exports to Western Europe since the war is attributed largely to that country's own need not only for all obtainable pulpwood but for maximum supplies of construction timber, as well. The prewar pulp production capacity of the Soviet Union was estimated as high as 1,000,000 metric tons (1,100,000 short tons) annually, and considerable efforts have been noted in the postwar period to enlarge the country's pulp and paper facilties. In addition, the pulp production capacity taken over by the Soviet Union as spoils of war is estimated in excess of 1,100,000 tons yearly (1,210,000 short tons) of which about 900,000 tons (990,000 short tons) was in acquisitions from Finland and Karafuto (Sakhalin Island). It is not unlikely that the greater part of pulpwood formerly shipped to Western Europe from Czechoslovakia and other "Iron Curtain" countries has in recent years found a ready, if not insistent, market within Russia's greatly augmented pulp empire.

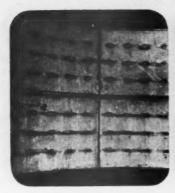
"The Soviet Union's 5-year plan of 1946-50 (the Stalin Plan) provided for a 1950 expansion goal in paper production up to 1,340,000 metric tons (1,474,000 short tons) annually, and the target of woodpulp consumption for that year was placed at approximately 1,650,000 tons (1,815,000 short tons). The achievement of this aim would have required an increase of some 65% in utilization of pulpwood. The Stalin Plan, moreover, officially discouraged the export of round timber from European districts of the U.S.S.R. and recommended timber shipments from only specified regions open for navigation a short period of the year.

"The Soviet Union has the world's largest reserves of softwood timber and is believed to be already developing the technical skill necessary to their exploitation and management. The enormous exigencies of the country's postwar program make a prospect of any large scale resumption of pulpwood shipments to Western Europe in the foreseeable future extremely questionable.

"Czechoslovakia reportedly plans, by 1953, to restore its production of pulp to the prewar rate. In prewar years that country exported on the average over 800,000 cubic meters of pulpwood annually, almost exclusively to Germany, but its pulp program and commitments to the East make resumption of large-scale pulpwood shipments to Western Europe most unlikely.

"Poland's forests experienced very widespread war devastation. As a result, it is improbable that its exports will be resumed in any considerable degree. Rumanian shipments of pulpwood were on a small scale. Its obligations, moreover, will tend to direct current and future shipments to the East.

"Yugoslavia, in addition to supplying sufficient wood to support the country's woodpulp production of 50,000 metric tons annually, has developed during recent years a growing foreign market for pulp-wood, with total shipments to Western Europe of nearly 600,000 cubic meters in 1950. Nearly two-thirds of that quantity went to Italy, and most of the remainder to Austria and the Federal Republic of Germany. Yugoslavia's pulpwood exports to Western Europe during the first half of 1951 declined to 185,000 cubic meters."



Order field-installed Incenel patches, like this one to lengthen service life of digester (if corrosicn is localized) at fraction of replacement cost.



2 Buy new factory-lined digesters like this one made by a patented, automatic resistance welding process. This photograph, showing X-ray testing of weld structure, is from the A. O. Smith Corp., Milwaukee, Wisconsin.



3 Install Lukens Inconel-clad steel digesters such as this made for use in the Crossett Paper Mills, Crossett, Arkansas.

ways to combat digester corrosion with Inconel

The short life of some modern sulfate digesters has made most mills conscious of the growing problem of accelerated corrosion.

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Recommendation of Inconel for digesters can be made, however, based on Inconel's unique properties. Not only has Inconel shown excellent resistance to corrosion by sulfate pulping liquors (tests show Inconel's ipy corrosion rate to be only 1/250 that of mild steel), but it also is not subject to embrittlement by these liquors.

And because Inconel has a coefficient of expansion

similar to that of steel it expands and contracts during the heating and cooling cycle at approximately the same rate as the steel. Inconel linings, therefore, do not tend to pull away from steel digester walls. This quality also permits use of wider strips of Inconel, making for lower labor costs on installation.

Perhaps you are troubled by accelerated digester corrosion. Then be sure to consider Inconel. And remember, there is a whole family of specialized INCO Nickel Alloys that can help do away with other production line worries as well.

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EUROPE

New Trends and New and Improved Equipment; Continent Competes With Scandinavia in Paper

UNITED KINGDOM

New Machines for Newsprint

(Population-50,616,000. Annual per capita consumption of paper-133 lbs.

Although still beset by problems characteristic of those facing the entire nation, the mills of the United Kingdom had reason to be moderately happy over activity during the past year and optimistic as to its future.

Britain will increase her newsprint imports from Scandinavia this year by about 10% in the second half of 1952 at a price expected to be slightly lower, but the country's own producers continued to be busy.

Government restrictions have had little or no effect on the operation of newsprint mills in the United Kingdom, according to Sir Eric Bowater, chairman of the giant Bowater organization, in an exclusive interview with Pulp & Paper.

Plans for another 70,000-tons-a-year newsprint machine at Bowater's Kemsley mills, the world's largest, have been approved and orders placed for equipment. Plans include new steam and power plants at Kemsley and Thames mills, speeding up existing paper machines in the United Kingdom, and development of the plants of the converting companies.

By March, 1953, new machinery being installed by the Imperial Paper Mills should be running. This has a total capacity of 35,000 tons yearly. Bowater's recent annual report may be accepted as a summary of the British position in general:

"Paper and board . . . continued to be controlled, both as regards tonnage, whether for home or export markets, and selling prices. The greater part of this production was of newsprint which, however, contributed only a minor part of the aggregate earnings. . . The trading profit of the United Kingdom mills were in all cases substantially higher than in the previous year—mainly as a result of the general upward trend in prices which ob-





MAJ. GEN. W. M. BROOMHALL (left), Moneging Director of Cellulose Development Corp., thd., Hatch End, Middlesex, England, mill builders in many countries and especially Celdecor continuous bleached straw pulp plants. He was warrime Chief Engineer of British Army of Rhine, later of Middle East. He succeeded late F. G. L. Becker, killed in 1951 air crash, as head of C.D.C.

need of t.u.t.

DR. G. RAIMONDO (right), Tech. Director of Cellulous Development Corp. and Managing Director of Celdecor Africa Ltd. He visited Latin America and U.S. on way home from Africa in May 1932.

tained throughout the year under review; a not unappreciable part of these increased earnings arising on stocks of raw materials held during this period of rising prices and on the stocks of finished goods held at times of increases in controlled prices, and a material part of the increased earnings has to be regarded as being required to provide against possible contingencies that may result in the future from a reversal of these conditions."

Incidentally, the trading profits of the associated Bowater industries, mainly by reason of greatly increased production, were more than two and a half times those attained in the previous year. The Bowater organization is one of the world's greatest and its enterprise in international expansion is hardly to be matched anywhere. In addition to mills in the United Kingdom and Newfoundland, and a project in Tennessee, Bowater has been negotiating for a foothold in New Zealand, operates a wallboard plant in Eire, pulp facilities in Scandinavia, and important off-

UNITED KINGDOM-PULP

(In Thousands of Short Tons)
Produced Consumed

	bleach	ed Groundwo	and	-	'ho	mical	Meck	anie	al.
1950		115	nn			.142		582	
1951		100				,170		571	
		Canadian	P	6	P	Assn.	and	U.	S.
Pulp	Prod	icers Assn.							

shoots in Australia and South Africa. Expansion currently under way will increase Bowater's newsprint output from 300,000 tons to 1,100,000 tons.

Sir Eric succeeded his father as head of the business in 1924 and the following year he built the first newsprint mill in England at Gravesend. Its capacity was doubled in 1929 and the next year he built a second mill whose capacity was doubled in 1932. The Lloyd Pulp & Paper Mills were acquired in 1936, and two years later Bowater established at Corner Brook, Nfd. Three groundwood pulp mills in Norway and Sweden were added to the group in 1937. The only parallel was probably the spectacular growth of International Paper Co. during the Graustein regime in the 1920's, but IP expansion was confined to North America. The world has been Bowater's oyster.

Newsprint production in the United Kingdom is still down compared with prewar. F. P. Bishop, general manager, Newsprint Supply Co., London, estimated that because of war damage British mills could now produce only 70% of pre-war output of 800,000 tons of newsprint a year. Pre-war Britain used 1,200,000 tons a year; the current prospect from all sources at the beginning of 1952 was about 600,000 tons, although the situation was improving at mid-year. British newspapers, although widely circulated, were still among the smallest in the world.

At the annual meeting of the Association of Paper and Board Exporters of Great Britain, in London, of which J. E. Pickering is chairman, A. E. Welch of the ministry of materials painted a grim picture, and emphasized the importance of paper exports to build up exchange.

1951 Data on Exports, Imports

A high percentage of Britain's production of coated papers is now being exported. In 1951, values of paper, cardboard, etc. imports and exports showed a striking increase. Exports of these grades rose in value by 50% to nearly \$125,000,000. However, the increase was primarily due to higher prices, weight and quantities being approximately the same as in 1950. Imports were valued at about \$250,000,000, compared with about \$90,000,

UNITED KINGDOM—WOOD-PULP-PAPER Converted to Thousands of Short Tons—Source: Board of Trade

		(CONSUM	PTIO	N -		,	News	print	Total	Paper
1938	Pulp Wood	Wood Pulp	Esparto	Rags	Straw		Paper Produced	Im- ports 491	Ex- ports 62	Im- ports 1,177	Ex- ports 193
1939	113 230 332	995 1,272 1,540	100 386 330	147 152 146 itest av	321 93 107 vailable	680 844 965	2,894 1,908 2,475 2,835	114 199 151	16 66 111	357 509 736	126 199 298

Now you can Burn Bark

reliably • efficiently • economically . . .

...with the new C-E method of SUSPENSION BURNING

Here is a revolutionary, new bark burning method – proved in service – that will soon be paying impressive dividends to prominent pulp and paper mills all over the country. Several companies have units, similar to that illustrated, in service, under construction or on order.

Suspension burning – primary feature of the new C-E system – overcomes the drawbacks of former bark burning methods.

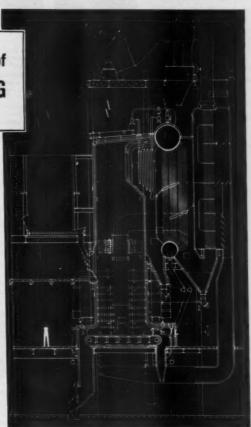
Bark or hogged wood is fed into the furnace by specially designed spreader units at a considerable distance above the grate level. Preheated combustion air is introduced through rows of nozzles arranged to assure extreme turbulence in the furnace.

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1952 Review Number

PULP & PAPER

77



000 in 1950 and \$60,000,000 in 1949.

Britain's imports of woodpulp in 1951 were valued at approximately \$300,000,-000, the tonnage being 1,679,000, compared with 1,431,000 tons in 1950.

This year pulp was beginning to reach Britain from Scandinavia at lower prices, but prices were still two and a half to three times the figure prevailing a couple of years ago.

Consumption of pulpwood in the United Kingdom during the fourth quarter of 1951 rose to an average of 8,190 tons per week, compared with the average of 6,710 tons during the third quarter. Consumption of waste paper was at the weekly average of 21,300 tons, a considerable increase over the 18,900 tons of the previous quarter.

Consumption of esparto grass was at the rate of about 8,000 tons a week during the fourth quarter of 1951 and this, too, indicated an increase. Shipments from North Africa were suspended during the third quarter owing to local tax difficulties, but were resumed in November. Prices for esparto grass during most of the year were about 42 pounds sterling per metric ton f.o.b., but a decline was expected. Consumption of straw for paper in the United Kingdom was at a weekly average of 2,450 tons during the latter part of the year.

Building board production has been increasing, the average being 860 tons a week during the fall months. Production of paper (other than newsprint) and board (other than building) rose to 45,000 tons a week. Imports of paper and board have been increasing.

Straw Paper and Board

On Jan. 21, 1952, it was stated in the House of Commons that the present rate of consumption of straw for paper and paperboard making was about 180,000 tons per annum and that, on the completion of schemes in hand, this consumption should increase in the current year by about one-third i.e. to about a quarter of a million tons. This compares with a peak wartime consumption of about 350,000 tons.

1951 saw start-up of a continuous bleached straw pulp plant, rated at 24 tons per day, supplied by Cellulose Development Corp. and installed by the Bowater Paper Corp. at their Sittingbourne mill. This is in addition to modernizing their existing straw semi-pulp plant whose production in recent years has been used, mixed with waste paper, in the manufacture of corrugated paper and boxes.

Dr. Julius Grant, until recently a Director of Thomas Owen & Co. Ltd., large straw pulp producers, wrote in the March edition of the Times Survey of British Agriculture: "To sum up, there is no doubt that with the advance of technical science, and with the assurance that adequate supplies of straw will be made available, there is a great future





SIR ERIC VANSITTART BOWATER (left), heed of the Bowater erganization, with mills in Britain, Eire, Norway, Sweden, Newfoundland (seen in Tennessee, U.S.A. toe), told PULP & PAPER of plans for another machine at Bowater's Kemsley Mill, in England, already world's biggest newsprint mill. They will have two new machines in Tennessee.

chines in Tennessee.

RALPH C. HEYES (right), is Managing Director
of Milispaugh's Ltd., Vulcan Road, Sheffield,
England, one of major paper machinery manufacturers in Europe. He has made on liceae
and installed many Morden Stock-Makers for
refining and pulp preparation in European
mills.

for a straw pulp industry in this country. It could influence the whole future of our paper industry."

Woodpulp

As for woodpulp, the United Kingdom is not a major producer, and it stands second only to the U.S. as a woodpulp importer. In 1950, the country's pulp industry produced a total of 137,000 short tons. The United Kingdom, in prewar years, was a substantial importer of pulpwood, chiefly from Russia. During the war, pulp mills used inferior grades of domestic wood, but even these supplies were virtually exhausted with peace. Consumption of pulpwood was estimated as approximately 550,000 cubic meters in 1950, an increase of 45% over the preceding year. Stocks on hand, last quarter 1951, were sufficient for 8 weeks of pulping.

Although domestic production of woodpulp appears negligible as compared with the 1,540,000 short tons consumed in the United Kingdom, about 90% of domestic pulp is used in making newsprint. Continuation of pulpwood imports from Finland and Canada, at levels sufficient to support capacity pulp production in the United Kingdom may be regarded as a requirement of significant importance.

BRITISH COLONIAL IMPORTS NEWSPRINT

Colony	1951 Imports (Tons)	contracted for in 1952 (Tons)
Cyprus	764	570
Nigeria	1.250	489
Jamaica	2,006	2,364
Trinidad	1,444	2,150
Kenya	1,022	2,050
Uganda	148	150
Bermuda	530	560
Singapore	6,381	2,948
British Guiana .	545	238
Barbados	282	282
Gold Coast	638	630
Malta	472	500†
Hong Kong	26,937	3,300††

†† 6 mos. only Source-To Pulp & Paper, from Colonial Office, London.

EIRE

First Pulp Mill Near Dublin

Population-3,006,000. Annual per capita consumption of paper-56 lbs.

Installation by Killeen Paper Mills Ltd., at Inchicore, Dublin, of equipment to convert native Irish timber into chemical and semi-chemical woodpulp was a significant development of the past year in Eire.

High cost of Scandinavian pulp and assurance there would be plenty of pulp-wood tributary to the mill for long-term production were major influences in determining the company's policy, according to G. Munford, director and manager, formerly chief engineer for British Vegetable Parchment Mills at Northfleet, Kent. Some state-managed forest will be utilized.

Interesting fact is that the original mill at Inchicore was built as long ago as 1775. It was closed many years, but some of the old building is being used and the whole plant is being enlarged. Machinery from U.S. and Germany is being installed. Double-faced corrugated board for containers was to be the first product when the mill got into operation in 1952. Eventually, wrapping, bag papers, liner, plaster board and fluted papers will be manufactured.

In the past, Eire has depended entirely on imported pulp so the Inchicore enterprise marks an important milestone.

Last year, Eire imported 19,699 tons of woodpulp and 1,922 tons of other types of pulp, to the value of more than 2,000,000 pounds sterling (about \$4,600,000). Paper imports represented a value of 6,427,689 pounds, the principal commodities being newsprint, cardboard in rolls or sheets, container material, etc.

Eire's total exports of paper making materials, cardboard and pasteboard, fillers and flats and other paper manufactures were valued at 1,500,000 pounds.

There are seven pulp and paper mills in Eire: Clondalkin Paper Mills, Ltd., Clondalkin, Co. Dublin; Drimnagh Paper Mills Ltd., Naas Road, Dublin; Killeen Paper Mills, Inchicore, Dublin; Packing Materials Ltd., 87-88 North Wall, Dublin; Swiftbrook Paper Mills, Saggart, Dublin, and Irish Wallboard Co., Ltd., Barrowford, Athy, Co. Kildare, and National Board & Paper, Waterford, which started up in 1950.

Total production in 1950 amounted to 34,477 tons, principal products being packing and wrapping paper; bags; printing paper other than newsprint, wallpaper base and wallboard (hardboard). Value of production has been averaging about \$10,000,000 annually.

Most of Eire's newsprint is imported from Canada or the Scandinavian countries. The domestic industry has found it difficult to compete with the United Kingdom in such items as writing papers.

Use of paper for wrapping has been steadily growing and it is expected that legislation will soon be passed compelling food merchants to use more wrapping materials as a sanitary measure. Large THE MEAD SALES COMPANY
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A reproduction of this incident from the fabulous life of Paul Bunyan-the sixty-first of a series-will be sent on request. It will contain no advertising.



EUROPE

quantities of greaseproof paper are used by the Irish dairy industry, and a new factory at Trim, County Meath, has been producing this grade for butter and cheese wraps. Two mills are producing wallpaper now, and at Waterford a mill manufactures saturating and laminated papers for roofing purposes. A dozen plants make containers and boxes, although folding boxboards are currently being imported from Norway.

EIRE-PAPER

					(1	n Short To	ons)	
					-	Produced	Exports	Imports
1949						10,029	1,239	52,993
1950						22,046	5.242	66,834
1951				0	0	722	11,364	60,000

Population—3,006,000. Annual per capita consumption of paper—56 lbs.

Population—8,490,000. Annual per capita consumption of paper—14 lbs.

FRANCE

May Be Big U. S. Pulp Importer

Population-41,900,000. Annual per capita consumption of paper-63 lbs.

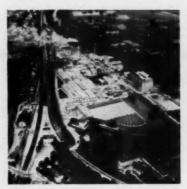
Latest data showed France as third ranking European nation for paper production, after Britain and West Germany, with 1,683,000 tons made in 1951. It even ranked fifth in woodpulp and these are reasons why a great deal of attention has been given by the North Atlantic nation group and agencies to rehabilitation of this industry. France may become an important importer of North American woodpulp.

The first of three new French straw semi-chemical pulp mills being engineered by Cellulose Development Corp. of England has been completed and is now in wrap and bag paper production. This is Cellulose de la Seine, at Nanterre, near Paris. It has a new Dominion Engineering paper machine from Canada in successful operation.

From the president of this company, M. Lacoin, Pulp & Paper received this commentary (although written under conditions earlier this year, it is most interesting as envisaging competition between new Swedish paper mills and the paper mills in the rest of Europe):

"In France we are extremely concerned to realize that all Scandinavian countries have used the very large amount of profit they have made during the last few years to build new paper machines. Consequently, they have exported much less pulp and much more paper, and this will completely modify the general position of all other European Countries. Anybody now is in a position to forecast a shortage of pulp and a very hard competition in the paper market.

"This will obviously start a very keen competition between European paper manufacturers, especially in France and Germany, where a lot of Scandinavian pulp is presently used, notwithstanding



AN AIR VIEW OF PAPETERIES DE CONDAT, in South Central France, in the Department of Dordogne. We reproduced this interesting photograph from the cover picture of the French industry publication, Papier, Carton et Celiolose. The Integrated operations of Societe Progil at Condat-la-Lardin involve tannin extraction of cleantnet wood, manufacture of bleached seds pulp from extracted wood, and conversion to fine papers in the one-machine paper mill. The pulp and paper mills are undergoing extensive modernization which will increase daily output from 27 to 50 tons.

FRANCE-WOOD PULP

(In Thousands of Short Tons)

	Cher	nical	Mechanical			
	Pro- duced	Con- sumed	Pro- duced	Con- sumed		
1938	. 148		230			
1949	217	565	291	368		
1950	231	657	320	420		
1951	248	636	353	457		

FRANCE—150 Years of Paper

Annual Production of Paper and Board in

							Sho	n I	ms						
Year						To	ons	Ye	ar						Tons
1800						22	,000	19	38						1,289,000
1850						55	,000	19	49				0		1,322,000
1900						450	,000	19	50						1,430,000
1914						900	.000	19	51						1,683,000
Source	e	1	p	a	ni	er. (Carto	m. C	ellh	al	n	SE	F	le	vue.

the fact they manufacture some pulp

"On the other hand there is more and more need for paper in North America, and apparently the pulp producers are reluctant to increase their capacity, because they would have to use timber located in remote and very inaccessible parts of the country.

"Our paper industry is trying to develop, as much as possible, the pulp industry in France and North Africa, using mostly other woods than evergreen; highly resinous woods, straw and alfalfa.

"At La CELLULOSE du PIN it was planned to start up during February 1952 a unit manufacturing straw pulp, which enables us to make better use of our kraft pulp. Since 1947, we have doubled our production of kraft pulp. A number of other French companies have started small straw units for the same purpose."

In connection with his mention of straw use in France it is interesting to recall that in 1946 the Monnet plan for the reconstruction and extension of the French industry set a capacity of 815,000 tons of pulp from domestic raw materials by the end of 1952 as a goal, including mechanical and chemical wood pulps and bleached straw pulps. According to present revamping and enlargement programs, a ca-



THIS IS A PHOTO OF THE LOURDELET-MARICOT CARTONNERIE, manufacturers of all kinds and qualities of cartons, with the huge plant artificially reised above the industrial area in Aubervilliers, near Paris, where it is located. This company was celebrating its 100th anniversary in 1952.

pacity of 790,000 tons should be reached by the beginning of 1953, which does not fall very short of the amount of the original plan.

Expansion in 1951 included start-up of a new mill at Nancy for Societe des Cartonneries de la Rochette, with a Black-Clawson cylinder machine, Shartle-Dilts Hydrapulpers, and refining.

Its mill La Rochette, in the Alps, was increased from 60 to 125 tons and put in rotary digesters, Bauer pulpers and Shartle refining. Its two mills in Nancy increased 50 to 100 tons and make fiber boxes. Its Venizel mill was increased from 35 to 60 tons in straw corrugating. This company also has four mills in North Africa and was reported considering entering the industry in Mexico.

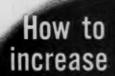
Georges Franck, general manager, 31 Rue de Constantine, Paris 7e, was recently on a tour in America.

Papeterie d'arches in Paris purchased and installed a Sandy Hill wet machine of stainless steel from U.S.

In his report on "Europe's Pulpwood Problems," appearing at the beginning of this WORLD REVIEW, Mr. Myers of the U.S. Department of Commerce had this to say on France:

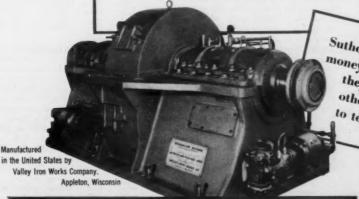
"In 1947, France received more than 950,000 cubic meters of German wood, but its cutting rights ended with the close of 1949, causing it to turn again to Finland, from which source nearly 200,000 cubic meters were imported in 1950. French production of pulpwood in the latter year, estimated as 835,000 cubic meters, was 8 percent below 1949 as a result of serious fire losses, particularly among stands of maritime pine which in 1949 comprised about one-third of the country's domestic pulpwood.

"The 1951 production of wood pulp in France was expected to reach 540,000 metric tons, which would require some 1,700,000 cubic meters of pulpwood. Domestic wood production was estimated at 800,000 cubic meters with expectations of 250,000 cubic meters each from Canada and Finland. To cover the deficit of approximately 400,000 cubic meters, it was necessary to reduce French pulpwood stocks to a critical level. An increase in pulpwood imports becomes the most pressing requirement in the solution of France's supply problem. Finland, Canada, and possibly Yugoslavia remain the only practical foreign sources of wood in quantities at all commensurate with



WHITE PAPERS

One sure way to boost your profit margin on white papers is to use more hardwoods. Sutherlands help you do this without sacrificing quality, and with a minimum of changes in your mill operation. Because Sutherlands refine pulp uniformly and maintain fiber length, folding characteristics are much improved in all grades of white paper. What's more, Sutherland precision assures you of the same superior results, day after day.



Sutherlands will make money for your mill as they have for many other mills. Ask us to tell you how.

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continuous beating systems

by SUTHERLAND REFINER CORPORATION

TRENTON 8, N. J.

1952 Review Number

PULP & PAPER

81

French needs. Purchi as of Canadian pulpwood in 1950-51, of Marshall Plan financing, and in the amount of some 250,-000 cubic meters, may forecast substantial independent buying by France in the Western Hemisphere."

ITALY

Newsprint Exporter-to-Be?



GUGLIELMO TURINI, president of Association of Paper Manufacturers of Reme, and general manager of Cartiere Miliani di Fabriano. He supplied information on Italian industry for this WORLD REVIEW NUM-

Population-46,272,000. Annual per capita consumption of paper-26,45 lbs.

The pulp and paper industry in Italy is one of the most important in the country. The total production of 700,000 tons of all types of paper estimated to have been produced in 1951 was turned out by 430 factories employing approximately 40,000 persons. With developments during the past three years, there are now about 330 Fourdrinier machines and 340 cylinder machines in operations in these plants.

This information was made known in an exclusive presentation to PULP & PAPER by Guglielmo Turini, president of the Association of Paper Manufacturers of Rome, and general manager of the Cartiere Miliani di Fabriano, one of the largest manufacturers of paper in Italy whose history goes back to the middle of the 13th century.

In delineating the growth of the Italian industry, Mr. Turini says the capacity for paper and paperboard production has increased from an estimated 110,000 short

SANDY HILL IRON & BRASS WORKS supplied this high speed machine for Torino Mill of Cartiere Burgo, which is expected to change Italy from an importer to an experter of newsprint. It has removable corrosion resistant Fourdrinier and Sandy Mill-Bertrams flow control unit.



AIR VIEW of the Verzuele (Cunee) mill of Cartiere

tons in 1900, to a capacity of 770,000 tons in 1951. His estimate of capacity is as follows:

onows.		
Newsprint	132,000	tons
Kraft Paper	60,500	tons
All Other	577,500	tons

According to Mr. Turini, there are 36 Italian firms now producing mechanical woodpulp, and 21 producing chemical woodpulp. Production capacity for mechanical is now about 176,000 tons annually, and he predicts that this will rise to more than 220,000 tons within a few years. For chemical pulp, the capacity is estimated at 165,000 tons, with 110,000 to 120,000 being woodpulp and 60,500 being straw cellulose. About 15% of this latter woodpulp production is market pulp.

Activity in Italy is particularly notable for the developments in the manufacture of pulp and paper from wheat straw. There are 15 firms now making chemical pulp from straw in an effort to compete with importation of woodpulps from other European countries.

Under the stimulus of the European Recovery Program there has been extensive modernization and rebuilding of

ITALY-PAPER PRODUCED

(In Short Tons)

	News	print	Krajt	Paper	Other Paper & Paperboard			
	Pro-	Con-	Pro-	Con-	Pro-	Con-		
	duced	sumed	duced	sumed	duced	sumed		
1938	82,687	84,362	31,972	32,028	413,437	411,182		
1950	94,705	98,233	44,100	45,203	396,900	410,792		
1951	114,000	117,800	55,000	58,000	525,000	530,000		

(Short Tons)

	Dis- solving	Chemical Pulp for Paper & Board	Mechanical	Total Woodpulj
1937	0	31,010	161,766	192,776
1940	17,956	- (?)	163,397	(?)
1947	17,613	40,958	106,288	164,859
1949	47.829	59,769	119,213	226,811
1950	48,141	60,296	140,873	249,310
195.	60,500	120,000	150,000	330,500
· Estima	ited			

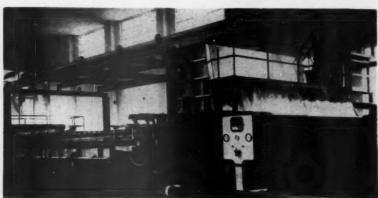
Italian pulp and paper plants during the past three years. A great deal of the stimulus has been supplied by visits of Italian manufacturers and technicians to the United States who have been inspired by the methods observed here to improve the conditions in their own plants.

These manufacturers spent 6,500,000 dollars during 1949-1950 in purchase of machinery from the U.S., including pulpers, refiners, hydraulic defibrators, presses, cylinder molds, as well as complete new machines. This equipment has also included automatic units for converting and finishing operations.

The extensive new U.S. installations include a Black-Clawson Co. Fourdrinier machine at the plant of Cartiera Italiana in the Italian Alps for the manufacture of cigaret papers and other fine tissue grades. There are 10 such machines now operating at this plant.

Cartiere Burgo, largest producer of pulp and paper in Italy, is another involved in the post war rebuilding and modernization program, and purchased \$1,650,000 of American equipment and services under ECA loan agreement. This firm owns and operates eight paper mills and three pulp mills.

The Sandy Hill Iron & Brass Works supplied the American-built papermaking machinery for the Cariere Burgo program. This included a completely modern





We're Building 'Em BIG and We're Building 'Em Fast

Things are really humming these days at the Moore & White plant. Complete Four-drinier and Cylinder machines have been built, are being built, and will be built—as fast as such mechanical mammoths can be built.

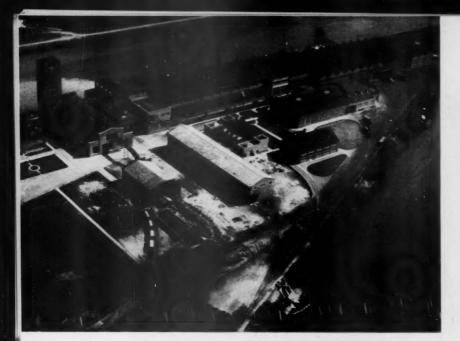
In the plants of some of the nation's leading paper and board manufacturers, recently built Moore & White machines are now in operation turning out the material needed to meet the zooming demand of business and industry—and doing it with the efficiency that spells profit.

Work in progress in the Moore & White plant today on the machine tools and on the drawing boards—includes complete paper-making machines for new customers and for customers who have long known that there's no place like Moore & White for getting things done, big or small.

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CUSTOM-BUILT MACHINES FOR PAPER MAKERS



removable Fourdrinier of non-corrosive construction for operation at high speeds on newsprint; two Sandy Hill-Bertrams flow control units; seven Sandy Hill selective drives; a size press; two openside calenders; stainless steel movable cylinder mould vat with Sandy Hill-Bertrams approach flow arrangement; and miscellaneous small units of equipment.

The Cartiere Burgo improvements are expected to change Italy from an importer to an exporter of hewsprint, according to Ing. Piero Bersano, one of the executives of the company. He says that sufficient domestic raw material will be available through proper harvesting and replanting, and by use of pulp made from the annual straw crop.

The Italian Association of Manufacturers of Paper and Cardboard says that it expects 1952 newsprint production in the country to reach 131,000 tons. This should confirm expectations of Mr. Bersano in changing Italy from an importer to an exporter of this product. Because this represents an increase in production of 17,000 tons, and imports of newsprint in 1951 amounted to only 3,850 tons. 1951 imports, by the way, were 56.5% less than 1950, and were supplied by U.S.S.R., which sent 46.7%; Sweden which sent 15.3%; Finland with 14.2%; and Austria with 9.4%.

Italy's production of pulpwood in 1947 was estimated at 220,000 cubic meters (nearly 60 percent hardwoods) which was regarded, at that time, as the practical limit of the country's felling rate. Official statistics show pulpwood production of only 153,000 cubic meters in the fiscal year 1948-49; 167,000 in 1949-50; and 159,000 in 1950-51, nearly half in two latter years being hardwood. It imported 392,000 cu. meters from Jugoslavia in 1950; 100,000 from Finland, but Yugoslav imports sharply declined in 1951.

Incidentally, the technical director of a large U.S. paper company told PULP & PAPER Italy is showing world leadership in its technical advances in use of hardwoods. Poplar (aspen) is widely used.

BELGIUM

Looks to America and Africa

Population-8,683,000. Annual per capita consumption of paper-103 lbs.

Belgium is forced to resort increasingly to use of indigenous wood in its pulp and paper mills, and it looks with great hopes and expectations to its only remaining colony with extensive forest resources the Belgian Congo. An American-Belgian group and two other Belgian groups are examining possibilities in the Mayumbe and Oubangie districts and at Lake Leopold II. Bamboo possibilities are being examined. The Syndicat de la Celulose Africaine is pulps for rayon and plastics from papyrus plants in the Congo. Belgian Minister of National Economy A. Coppe has appointed a national board to study material supply for paper (see AFRICA section for more details).

The Belgian industry also will look to North America for more pulp. This was evident in the trip to U.S. and Canadian centers made in the past year by William F. Boks, administrator of the international pulp sales firm of Gross & Irgens of Antwerp. Last year Belgium made more paper than ever before in its history. A large percentage of raw materials is still imported from North Europe.

We are indebted to Mr. Boks, and to G. Echemont, of Compagnie Commerciale des Celluloses, Brussels; to P. Ceuterick, of Papeteries de Belgique S. A., at Duffel; and to "Cobelpa," the central association for Belgian paper manufacturers for interesting facts and information for this review.

The Belgian woodpulp industry consists of two chemical and one mechanical mill, all integrated with paper. Three other paper mills have a few grinders. The woodpulp chemical processes are sulfite in one mill, kraft in the other.

During 1951, Belgium imported 87,692 cord of pulpwood, chiefly from Finland. It imported 195,000 tons of woodpulp, includAERIAL VIEW OF MODERN NEWSPRINT MILL of "Pepeteries de Belgique" et Lengerbrugge neur Chent, Belgium. The groundwoed mill is equipped with 10-1000 P. S. chalngrinders, the newsprint mill with Shurtle Hydrapulpers, Morden Stock-Makkers, Houg refiners and two Fourdrinier machines running at 1200 ft./min. Preduction: 55.000 tons/yeur.

BELGIUM-PAPER

(In Thousands of Short Tons)

Pro- duction: 1939 1948 1949	52 48 55	Book and Fine 85 98 96	Wrapping and Coarse 85 87 92	Total Paper 235 245 257 304	Paper Board 26 26 22 23	Total Paper and Paperboard 261 271 279 327
1950 1951	68	105	113 120	304 304	23 54	327 358

BELGIUM-PULP

(In Thousands of Short Tons)

	Prode	uction	Consumption		
	Chem.	Mech.	Chem.	Mech	
1939	28	36	155	65	
1949	20	42	116	75	
1950	31	50	144	88	
1951	43	60	196	91	

BELGIUM-PAPER

Consumption (Short Tons)
Total Paper &

1936	Newsprint 89,300	Paperboard 296,000
1949	77,100	346,800
1950	85,400	410,300
1951	87,700	407,400

ing dissolving pulp. This was about 16,000 tons more than 1950, and of this 5,652 tons came from the U.S.A. Some 11,000 tons of chemical pulps were exported. Woodpulp was sufficient for needs, but just barely so. Prices were three times as high as in 1949.

The paper output of 358,000 short tons, including board, was made in 36 mills, and that puts the output at 94,000 tons over the 1937 mark. The imports amounted to 139,000 tons, 4,848 from U.S.A. and most of it from Europe.

Commented Mr. Ceuterick:

"Belgium's timber resources are not sufficient for needed manufacture of unbleached sulfite and kraft pulp. Difficulties in supplies have created large purchases at a considerable rise in price. Belgian pulp and paper makers, and agricultural experts are studying use of home grown materials such as hardwoods and flax and cereal straw, and Belgian Congo papyrus, bamboo and wood."

Mr. Boks, in an interview with PULP & PAPER, pointed out that Belgian paper production in 1951 was substantially over 1939 levels, showing good recovery after the war and since the liberation. He cited the months of January, March and June which showed mills running at 141-143 per cent of 1939. The lowest was July, 107 per cent (a month of holidays in Belgium, and the year ended in December at 113%.

He observed that woodpulp consumption in Belgium was at the rate of 72 lbs. per person, as compared with paper consumption of 103 lbs.

A well known Belgian mill is producing genuine vegetable parchment of worldwide reputation, said Mr. Boks, in response to an inquiry about interesting production in his country. This is Pape-

(Continued on Page 89)

POWELL RIVER

UNBLEACHED

STRENGTH COLOR SERVICE DEPENDABLE SUPPLY

POWELL RIVER SALES COMPANY LIMITED —

SULFUR DIOXIDE STRIPPING

Stripping of sulfite waste liquor for recovery of sulfur diaxide has been developed by Vulcan on an economic basis, particularly in conjunction with by-product chemical production. Recovered SO₂ can be returned to the acid plant in gaseous form or in aqueous solution.



VULCAN ENGINEERING

FOR THE

PULP AND PAPER INDUSTRY

VULCAN ENGINEERING DIVISION OFFERS:

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Here in America we are entering a new era of industrial production which may well lift our country to undreamed of levels of high living standards. Those bent on the destruction of the free enterprise system cannot clearly estimate America's great industrial capacity. They attempt to match their mass population against ours, while overlooking our superior technical capacity per man — our individual initiative, know-how and productivity. We must maintain these advantages by using our greater technological power to the fullest.

The Vulcan organization in Cincinnati has been serving many chemical, food, pharitaceutical, petro-

leum, textile, paper and pulp companies all over the world for the past fifty one years, as designers and builders of processing plant equipment. Vulcan can provide technically-trained manpower and specialized facilities to help other companies with their processing problems — especially those now called upon to bolster the country's defenses while meeting the steady appetite-of civilian demands.

Vulcan's engineering and fabricating techniques have progressed thru fifty one years and will insure a successful operating plant from its startup to the peak of full-scale commercial production.

ABSORPTION SYSTEMS

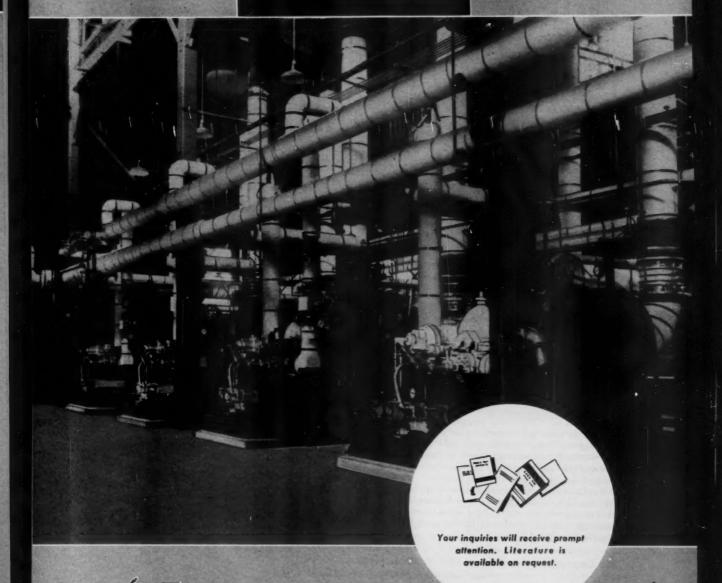
The modern design of bubble cap, perforated plate, and cascade type absorbers has been applied to acid absorption sys-tems and acid recovery units in pulp mills with resulting savings in equipment and operating

WASTE DISPOSAL SYSTEMS

Complete systems for disposal neered and built by Vulcan and are now in successful operation. ping of recoverable chemicals and utilization of waste concentrates as fuels.

HEAT EXCHANGERS

pecial hear exchangers have been esigned and built for handling of prosive solutions containing fibers omman to pulp mill aperation. The pecial exchangers have been in operation and show consistent characteristics of high heat transfer coefficients wer long periods of time with a linimum of fouling.





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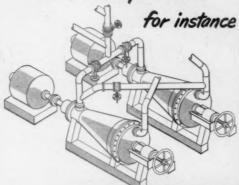
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Can Your Valves Match

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... on 4% Pulp Stock



THE INSTALLATION

On pulp stock lines in Jordan room at Chase Bag Company mill, Chagrin Falls, Ohio.

THE HISTORY

Valves formerly used caused excessively frequent shutdowns for cleanout of clogged lines. Pulp trapped in seats and bonnets; valves inoperative. Working conditions: Consistency of stock normally about 4%. Pipe and valve size, 8 in. throughout system. Operation continuous; valves operated infrequently.

Replacements made with Crane Pulp Stock Valves. Now in service more than 5 years, with routine maintenance only, Crane valves have not required a single shutdown. Clogging of lines completely stopped.

The Complete Crane Line Meets All Valve Needs. That's Wby,

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VALVES . FITTINGS . PIPE . PLUMBING . HEATING

Best any other used

MAINTENANCE COST:

none - Poutine only

CORROSION-RESISTANCE:

no problem here

SERVICE LIFE:

In syears -no sign of wear

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AVAILABILITY:

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THE VALVE

Crane No. 1425 non-clogging, selfcleaning, bonnet-less Pulp Stock Valves with patented combing-and-shearing-action disc and seating design. Knife-edge disc shears combed fibers to seat easily against lead stop. One of the complete Crane line for pulp and paper mills. See your Crane Catalog or consult your Crane Representative.



88

PULP & PAPER

More Crane Valves Are Used Than Any Other Make!

1952 Review Number



EUROPE

BELGIUM-(Continued from Page 84)

teries Delcroix at Nivelles. The product was introduced in Belgium in 1872 by Ferdinand Delcroix. They have now the very latest equipment. Their staffs are 50% with experience of 25 to 40 years. The company makes 33 tons a day.





THE NETHERLANDS

Strawboard Its Salvation

Population-10,027,000. Annual per capita consumption of paper-108 lbs.

F. H. A. de Graaff, director of Van Gelder Zonen, which last year produced about 48% of the total paper production of the Netherlands, told Pulp & Paper in a statement for this issue that the industry was very prosperous in 1951, both at home and in the world markets, but that he looked for downward trend in 1952 from the record high peaks. He said the going would be more difficult and the industry would have to work harder.

The Van Gelder Zonen mills are the only sulfite and mechanical pulp producers in the country, also the only newsprint producers. Along with other companies, they have expanded, building an entire new mill at Wormer with a Voith (German) 167 in., 1400 f.p.m. Yankee machine, one of largest for tissue in the world. The Yankee is 200 in. diameter, weighing 78,000 kgs. (172,000 lbs.) and its transportation from South Germany was a difficult feat.

The strawboard industry is a remarkably fast growing one in the Netherlands. Other papers and boards hit a record of 368,000 metric tons in 1950 (405,000 short tons), a substantial increase over 1950's

(Continued on Page 92)

This Lubricant

saved us
\$2,098.16"

"During the seven month period before using LUBRIPLATE No. 130AA in the bearings of our Kraft Mill Lime Kiln, we used a conventional oil of the density recommended. The cost of the lubricant for the period was \$2,134.00. In the seven months that followed, we only used 128 lbs. of LUBRIPLATE No. 130AA for initial filling and replacement at the cost of \$35.84.

ly applications whereas the former lubrifrom the lightest fluids to the heaviest cant required daily application." density greases. They reduce friction, wear and power consumption, they The Brown Company is a progresprevent rust and corrosion, they last sive organization that is continuously much longer than ordinary lubricants. seeking ways to improve their prod-There is a LUBRIPLATE Lubricant that ucts, their methods and to cut costs. is best for every lubrication require-Naturally, when they found LUBRIment. Let us send you information PLATE No. 130AA, a grease type lubriabout the use of LUBRIPLATE Lubricant with great adhesive qualities, high cants in your industry. Write today. film strength, and with high heat resistance, they saw the possibility of using

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LUBRIPLATE Lubricants are available

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it to their advantage in the bearings

of their kilns and other equipment.

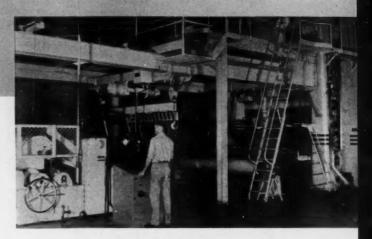
LUBRIPLATE No. 130AA only requires week-

THE MODERN LUBRICANT

How Reliance Motors and Control make new 148" Supercalender and 2-Drum Rewinder pay the greatest dividends

Because Reliance Application Engineers have had long and diversified experience in applying complete drive systems to paper mill machinery, the investment made in this new 148" supercalender, winder and 2-drum rewinder is returning the greatest possible dividends in quality and quantity of production.

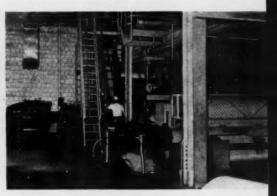
Co-ordinating motors and associated controls and regulators to achieve the most efficient operations of equipment like this has become a Reliance specialty which has been employed to advantage by important mills throughout the country. For more specific information on how Reliance works with mills and equipment manufacturers, call in a Reliance Application Engineer.



40 FPM. to 2000 FPM. Reliance motor drive operates this supercalender at any speed from a low threading speed of 40 fpm. to a high operating speed of 2000 fpm. In addition to controlling speed of the entire machine, a Reliance Electronic Control provides pre-set speed over the complete range and controlled linear acceleration and deceleration.



Constant or Topered Tension Control of Winder—Automatically! Shaft-type winder is equipped with separate Reliance Motor Drive controlled by a Reliance Electronic Regulator which limits thread speed and also gives operator automatic control of either constant or tapered tension on the paper. Whatever degree of hardness is desired can be achieved in the roll.

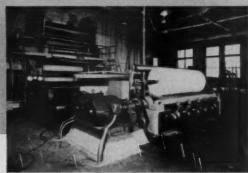


Reliance V*S Drive Controls Tension and Speed of Rewinder — Electronically! Two-drum rewinder is operated by a Reliance V*S Drive incorporating a Reliance Electronic Regulator. In addition to providing automatic control of either constant or tapered tension and feed-in speed, the Regulator compensates for increased windage losses at higher operating speeds.

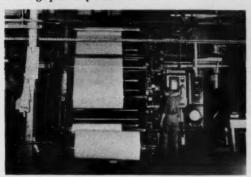
In applications like these, RELIANCE DRIVES are helping paper mills to maintain quality and maximum production in supercalendering



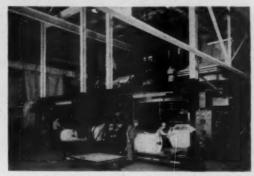
Operator Convenience of Reliance Drives is notable in this 157" supercalender application. With centralized control, the operator can easily make adjustments in tension or change pre-set speeds.



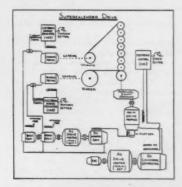
Edge Guide Control saves paper on this unwind. Reliance electronic edge guide control shifts the rewinder roll so that the side trim is kept constant and narrower trim is made possible.



Packaged Drive Saves Space on this supercalender installation, driven by a Reliance V*S Drive with electronic control. The electronic unit provides for timed-rate acceleration and deceleration, pre-set speeds and improved speed regulation.



individual Field Rheostats are used for varying the hardness of the rolls on the 4-drum winder of this supercalender application. With a Reliance motor for each drum, operators can adjust the load of each drum as required.



Typical Reliance-engineered Drive for supercalender with shafttype unwind and shaft-type winder is illustrated here. Drive consists of all electrical equipment necessary for power and control. In addition to variable voltage control, motor field control is incorporated to provide increased torque for operation below maximum line speed. Electronic units provide timed-rate acceleration and deceleration, pre-set speeds and improved speed regulation in operation of supercalender and tension regulation in operation of unwind and winder.

RELIANCE ELECTRIC AND CO.



EUROPE

THE NETHERLANDS

(Continued from Page 89)

record of 319,000 metric tons. This does not count strawboard.

The strawboard production was almost as much—325,000 metric tons in 1951 (357,500 short tons) and a big program is under way. Until recent years there was only one mill in the Netherlands making quality strawpulp—that was the Phoenix Mill (shown in picture) which made only 8,000 metric tons bleached pulp a year. It was built in 1890. Its production is now doubled. A new straw semi-pulp mill at Arnhem was shown in a picture in our last year's WORLD REVIEW. Other expansion is designed to doubled strawboard output over recent years.

The Netherlands uses straw more extensively for pulp and paper than any other country in the world, a total of 525,000 metric tons a year. This is more than one-fourth of all its straw. Many other countries use only 1% to 3%, the U.S., for example, only 400,000 metric tons out of an 150 million tons of straw.

Henk Voorn, publisher and editor of Holland's pioneer paper industry magazine, De Papierwereld, founded in 1946, has written the following comments for us on the Dutch industry. Born in Amsterdam in 1921, he worked in a paper agency five years and with the government on paper distribution during the war.



HENK VOORN, Editor of De Paplerwereld, busy in his library. He wrote a report for WORLD REVIEW on the Netherlands.

By Henk Voorn

New records were reached in papermaking. Also in strawboard. All of the chemical and mechanical pulps are produced by Messrs. Van Gelder Zonen, the only woodpulp mill in the Netherlands, for their five paper mills.

Strawboard production is very important. The Phoenix mill now makes 12,000 metric tons of straw pulp annually. Soon it will make 15,000. All is sold in open market.

The mill "Eendracht" at Appingedam turns out about 10,000 metric tons of strawpulp annually, most of which is sold in the open market, small lots being used in their own board mill.

The new strawpulp mill working with the Celdecor-Pomilio process at Arnhem,





TOP VIEW—NEW WORMER MILL of Van Gelder Zonen, Holland's largest papermaking company. It has 5 mills. It has new Voith-mede (Germany) 200 inch diameter Yankee machine, one of largest in world, width 167 inches. Speed, 1400 FPM.

LOWER VIEW—PHOENIX MILL at Veendam, Holland, which was first strawboard mill in that country.

N.V. SOVE, has not yet been producing during 1951. It is expected that this mill will start about May 1952, making 15,000 metric tons of bleached strawpulp. Production of dissolving pulp at this mill will start at a later date.

Figures are known about the number of paper machines in the Netherlands on the 1st of Jan. 1951. The total amounts to 78 machines, of which 70 Fourdriniers and 8 cylinder machines. Of these 70 Fourdriniers, 7 are up to 150 cm wide (60 inches), 20 are 151-200 cm wide, 30 are 201-250 cm wide and 13 are wider than 250 cm. (100 inches).

Consumption of paper in the Netherlands was during 1950 393,624 metric tons, of which 70% was home-made, and 30% import. During 1951, some mills were modernized which resulted in larger productions. Among them are Schuller & Co. at Nijmegen, which makes only glassine, the fine paper mill of Gebr. Tielens at Meerssen, the fine paper mills of Van Houtum & Palm at Apeldoorn, Van Gelder Zonen's newsprint mill at Renkum, and the wrapping paper mill "Berghuizer" at Wapenveld.

The second papermill of Van Gelder Zonen at Renkum celebrates this year its 40th birthday. This mill, modern in every respect, now boasts a capacity twice as

THE NETHERLANDS

	(Pulp Const	imption in Chemical		ns)
		Woodpulp		Rags
1938	157,128	65,333	58,636	9,398
1939	15,131	81,525	71,193	10,055
1946	41.846	72,527	11,556	60,095
1948	80,997	102,157	105,108	142,983
1949	80,384	115,208	91,688	17,604
1950	90,100	136,070	97,570	193,604
	(la	test availab	ole)	

THE NETHERLANDS-Pulp

(In Thousands of Short Tons— U.S. Pulp Producers Assn) Sulfite

										Sume	mecn.
1949										35	42
1950										66	66
1951										36	55

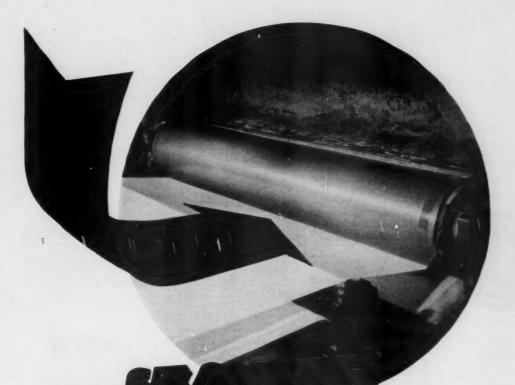
large as that for which it was originally built.

Among minor innovations in the Dutch industry we may mention the installation of a small straw paper machine at the Union mill, built by Hoyer, Lehr (Germany). The Eendracht mill installed a French-built machine for its straw pulp production. The strawboard mill De Halm will have a new machine ready soon.

The more important new installations are a fine Yankee machine, built by Dörries in Düren (Germany) for the mill of N.V. Wed. Schut, which was being installed during 1952, the new Massey machine* for coated paper at the N.V. Koninklijke Nederlandsche Papierfabriek at Maastricht, and a new Yankee for Messrs. Van Gelder Zonen's wrapping paper mill at Wormer (167 in) built by J. M. Voith of Germany.

The new machine at Maastricht, which

(Continued on Page 96)



WHERE

Stands Out

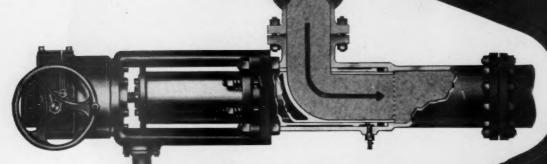
Paper men all agree that you can't tell much about a rubbercovered roll from its appearance... and most of them also agree that where records are kept STONITE stands out. The amazing combination of fine surface finish with its ability to press and release the sheet without sticking or picking, is just one of the features contributing to this outstanding performance.

Your Stowe-Woodward Sales Engineer can tell you about other Stonite features which are equally important. He's a rubber roll specialist. Ask him where STONITE fits in your plant.



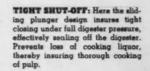
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NEWTON UPPER FALLS 64. MASSACHUSETTS



OPEN







FOR

YAR WAY

DIGESTER BLOW VALVES

These two cross-section views of the Yarway Seatless Digester Blow Valve, in open and closed positions show two good reasons (free discharge and tight shut-off) why Yarway Valves are being used on more and more pulp digesters.

Besides the advantages inherent in the seatless design, Yarway Blow Valves have certain other important features:

FAST OPERATION—by remote push button control, these motor-operated valves speed digester discharge . . . in one typical mill, resulted in

an increase of 20 tons of pulp a day.

RUGGED CONSTRUCTION—built to withstand the shock and wear of toughest service. Frequently take up to 6000 blows before reconditioning.

MODERN METALLURGY—such as lower gland (sleeve) of chromium nickel stainless steel and sliding plunger of hardened stainless steel—resists wear and chemical action.

If you are interested in safety in operation, increased production, low maintenance, savings in labor—then write for Yarway Bulletin B-440.

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THE NETHERLANDS

(Continued from Page 92)

is to produce machine-coated paper by the Massey-process is the first of this kind in the Netherlands. The very fine 126 in. wide machine was built by Voith of Heidenheim (Germany) and started its production during the 'year 1951 by making printing paper, and it will start to produce coated paper in 1952.

Named for Peter Massey, of Chicago, who developed Consolidated Water Power & Paper Co.'s on-machine coating process.

Sandy Hill Machine

PULP & PAPER learned from Sandy Hill Iron & Brass Works, Hudson Falls, N.Y., that it designed and built a wet machine making matrix, trunk board and special ties at Jan Van Delden mill in Vaasen, Holland.

Strawboard Report

Dr. Joseph Atchison of Pulp & Paper Branch, Mutual Security Agency, Washington, D.C., has written a very complete report on straw pulping in Holland. He credits Dr. F. M. Muller, and formerly E. L. Ritman, heads of The Netherlands



BIG YANKEE Machine built by Voith of Gora and installed in new Wormer Mill of Van Gelder Zonen in Netherlands. Yankee is 200 inches eter, weighs 86 tons. Transporting it from a Germany was difficult feat.

HE READS PULP & PAPER

CONSTANT NINCK-BLOK, Research and Laboratory Direc-tor of Holland's biggest mills, Van Gelder Zonen (suifite, groundd and paper Velsen; new mill at Wormer) reads PULP & PAPER magazine, as you can easily see!



Experiment Station for Straw at Groningen for much recent development. He wrote, in part:

"The strawboard industry constitutes the largest segment of the pulp and paper industry. There are 19 strawboard mills, with a total of 56 paper machines, in The Netherlands, having a total production capacity of about 350,000 metric tons of heavy strawboard and straw corrugating paper per year. Seventeen of the nineteen mills are cooperative members of a tightly controlled strawboard association. Through the Association, the members cooperate in such matters as production quotas, price levels, market research, quality improvement, etc. The two outside mills left the Association in 1949 due to some disagreements. However, these two mills are far from being the least progressive of the group and they are continuing to make improvement on their

"During 1951, all of The Netherlands strawboard mills were operating at almost full capacity, using more than 400,-000 metric tons of cereal straw. In spite of the fact that all of these mills have obsolete, small, slow running, inefficient paper machines, they are able to compete in the world markets on prices at the present time.

He described the Dissolving Pulp Pilot Plant at the new SOVE mill (Arnhem). A novel feature, he said, is batch type equipment simulating the continuous Celdecor cook process at low temperature and pressure. Straw is treated to caustic in mixing and dosing chamber, then fed to rotary digester (same liquor ratio as cont. Celdecor—3.5-to 1). Then the cook ranges from 110 to 120 degrees

Basic equipment: (1) complete straw cutting, dusting and cleaning; (2) mixing and dosing equipment for adding chemical; (3) rotary globe digester 600 pounds capacity; (4) washing to remove caustic; (5) screw press for dewatering unbleached pulp; (6) opening machine to increase surface area of pulp; (7) chlorine towers (14" in dia., 25 ft. high); (8) washing to remove chlorine; (9) coarse screens for removal of nodes returned to digester; (10) fine screens; (11) complete bleaching for caustic extraction and hy-pochlorite followed by acid treatment; (12) prehydrolysis before cooking; (13) small wet lap machine and (14) complete testing equipment.

SWITZERLAND

More Machines Projected



CELLULOSEFABRIK ATTISHOLZ, at Attisholz, CELLULOSEFABRIK ATTISHOLZ, at Attisholz, Switzerland, is only mill in that country which makes woodpulp. Its pulp is sulfite. It supplies bleached and unbleached pulp to the UTZEN-STORF Mill, nearby, which makes groundwood and newsprint and other printing grades. In the WORLD RYIEW last year, a picture of UTZENSTOFF was published. This is mill which installed new Pusey & Jones 138 in. Fourdrinier is 1950.

Population-4,703,000. Annual per capita consumption of paper-105 lbs.

There has been no completed expansion on a major scale in Switzerland in the past year since several new machines went into operation in 1950-51, as we reported in our 1951 WORLD REVIEW. One was the Pusey & Jones machine at the Utzenstorf Mill, one of Europe's most modern. Another big machine went into the Zwingen mill and there were two other new board machines and two small paper machines added to the production lines.

Here is a new report received in late May of this year from W. Lanz, secretary of Verband Schweizerischer Papier- und Papierstoff-Fabriken, the association with headquarters at Bern:

"For your WORLD REVIEW, I would give you the following report:

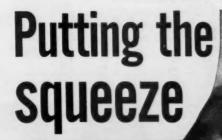
"1951 was a good year for the Swiss paper industry. All plants worked practically to capacity. Though new records were reached in all grades of paper, well above pre-war levels, it was rather difficult to cover the demand which continues to grow and expand.

"The supply in raw materials was sat-isfactory. The shortage of pulpwood in Switzerland forced the industry to buy large quantities of wood from Finland and Canada. This meant naturally a consider-

See Page 3 for conversion factors to help you in using this WORLD RE-VIEW: How to transpose Metric Tons to Short Tons and vice versa; Cords to Meters, etc.

THE NETHERLANDS-Paper Production (Not Inc. Strawboard) (In Short Tons)

	News	Book & With Woodpulp	Writing With Woodfree	Kraft Paper	Board	Other	Total
1938	97,329	8,655	47,248	84,655	18,103	23,645	279.635
1948	78,746	337,233	36,074	107,396	24,758	23,875	304.571
1949	81,737	17,470	55,207	104,529	20,589	30,630	310.162
1950	87,680	20,240	66,550	116,500	30,250	29,480	350,900
1951	100,980	26,180	79,090	168,310		29,590	404,470
* Included in pr		lumn.					4,



on costs

Clean, strong pulps at lower cost...
that is the reason Pressure Washing Systems are being installed
in many of the largest and most progressive mills in the industry
today. Here are some of the ways that costs are squeezed:

Heat economy... Wash-water temperatures exceed 200°F, greatly reducing evaporator costs.

Low water consumption . . . less than 200 g.p.m. for a 300-ton system . . . minimum stream pollution.

Low power requirements . . . actual horsepower consumed by a typical 3-stage, 300-ton system is only 1.36 per air-dry ton.

Systems can be furnished in two, three, and four stages to fit individual mill needs. Low labor costs ... one man controls entire system from a single switchboard.

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1952 Review Number

PULP & PAPER

97

able cost increase of which resulted further increases of the paper prices, on an average of 35 per cent.

"New mills have not been built in Switzerland."

The lone sulfite mill, shown in picture, normally has even exported some of its pulp. No kraft is made as yet in Switzerland.

While no actual installations were reported by Mr. Lanz in the past year, A. M. Hurter, project and process engineer of Stadler, Hurter & Co., Montreal, who returned this spring from Switzerland, said there are a half dozen new machines projected for, or in process of erection in Switzerland. An engineer in that country who is active in new development is Raoul Naville, 26 Borsenstraase, Zurich, Switzerland.

Swiss production of pulpwood in 1951, according to official figures of the Federal Office of Forestry Inspection, amounted to

SWISS PRODUCTION

(In Thousands of Short Tons)

	Sulfite Pulp	Ground- Wood	News- Print	Other Printing Paper	Wrapping Paper	Other	All Paper	Paper Board	Paper & Board Total
1935	 45	43	34	29	22	27	112	40	152
1945	 62	52	40	36	35	34	145	44	189
1949	 72	69	50	44	42	40	176	51	227
1950	 80	77	52	50	45	40	187	55	242
1951	 97	87	55	55	53	57	220	66	286

322,500 cubic meters, an increase of about 22 percent over 1950 production of 265,000 cubic meters. The industry operated near or above capacity throughout 1951. Production forecast for 1952 is about 300,000 cubic meters. Actually, the industry would like to obtain an even larger output of pulpwood in 1952 than in 1951, but it is believed that production will decline slightly because of (1) the difficulties of forest owners in 1951 in meeting the full amounts of their contracts with pulp man-





URS H. SIEBER (left), is General Manager of the big ATTISHOLZ Mill of Switzerland, shown in another picture. This mill is only woodpulp manufacturer in Switzerland—making suifite. SIEOFRIED H. AESCHBACHER (right), well known in international industry circles, became the new Manager of the Balathal Paper Mills in Switzerland. He had been Manager of the Utzenstorf Mills during their expansion and made a trip to the U.S. in 1950 in connection with ordering a Puseyjones machine, Appleton supercalenders, Jones refiners and other equipment.

ufacturers, and their consequent desire to avoid burdensome commitments in 1952, and (2) the high prices prevailing for construction wood that led to diversion of sales for that market. The Central Office of Forestry issued an appeal in January 1952 to forest owners for a more equitable sharing of their production between the paper and construction industries.

Consumption of pulpwood in 1951 was estimated at 555,000 cubic meters, about 12 percent above the estimated 497,500 cubic meters consumed in 1950. Consumption in 1952 is forecast at about 637,500 cubic meters.

SPAIN

Straw for More Mills

 $\begin{array}{l} Population-28,\!287,\!000. \ Annual \ per \ capita \ consumption \ of \ paper-18 \ lbs. \end{array}$

It is not so well known, but the papermaking industry in Europe got its start in Spain about 1,000 years ago at Javita. It is now become an industry of importance in that country. Esparto grass, a choice material for paper, and straw are both plentiful in Spain. New pulping developments hold great promise for the eucalyptus and pine forests.

Again we take pleasure in presenting a first hand report on this industry written especially for this issue by the director general of one of the biggest companies—Antonio de Sabate's. His company, La Papelera Espanola makes more than 50% of Spain's pulp and paper; has also branched out into cellophane. He writes:

"No new mill has been put into operation in Spain in 1951. On the other hand, new machinery for making pulp has been

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In use since 1933 in the pulp and paper industry, where other type check valves fail when used with caustic solutions.

- Ball rolls up on inclined guides, leaving a minimum of restriction for the fluid. Inclined race eliminates the ball ringing the sect.
- Valve has removable seat.
- Ball is cast hollow and is precision ground to accurate size.

Cut-away view showing inclined ball race and ball in closed position. Ball in phantom is shown at top of raceway, or in open position, leaving a minimum of restriction.





Valve is obtainable in cast iron, steel, bronze and stainless steel and also in combinations of cast iron, steel or bronze with stainless steel ball and

sturdy, simple construction.

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set up, because the problem that the Spanish paper industry has to face is a shortage of wood and other kinds of pulp. Imports have been very scarce during the year, but paper production has gone up by approximately 10%. Groundwood and straw pulp have made this possible.

"Another favorable circumstance in the past year was the end of a severe drought that had affected electrical power supplies from 1948. Hydroelectrical plants were running at less than 50% of their capacity and this of course meant that almost every factory was far below its normal output.

"One of the most important mills in Spain is located in Prat de Llobregat (Cataluña). It belongs to La Papelera Española and has two Voith paper machines, with a daily capacity of 20 and 33 short

ABOVE—UNLOADING OF PULPWOOD at Reuteria Mill of La Papalera Espanola. Balow—Two Board Machines, one 22 tons a day, the other 50 tons a day at Pret de Llobregat Mill, near Barcalona.

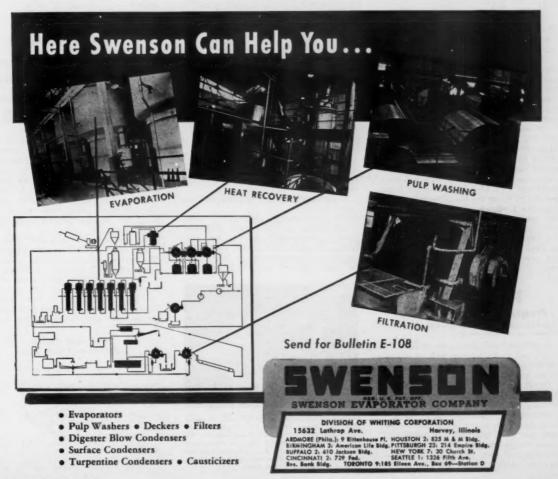
tons. It has also two board machines. One of them is Bell, with a daily capacity of 22 tons, and the other Voith with a daily output of 50 tons. In this mill straw pulp is produced in four small digesters, with a capacity for bleached straw of 7 tons. Esparto grass is also converted into pulp in the same capacity and groundwood is obtained as well with two Voith grinders, with a capacity of 17 tons per day. In the same mill, board is converted into corrugated cardboard and boxes. Now,

SPAIN-PULP PRODUCTION

(In Short Tons)

		Kraft-	Ground	-	
	Sulfite	Soda	wood	Straw	Total
1935	11,025		16,537	6,615	34,177
1949	65,210	4,504	21,353	12,224	103,293
1950	101,883	5,587	25,536	13,859	146,866
1951	103,143	6,123	28,550	20,915	158,731







5PAIN—PAPER PRODUCTION (In Short Tons)

	Fine	Tissue	Newsprint	Kraft	Paperboard	Printing Paper	Total
1935	. 15,435	2,756	8,820	7,717	44,100	154,350	233,178
1949	. 54,494	1,653	19,536	4,762	23,686	96,631	156,665
1950	. 12,429	2,205	22,020	5,179	29,038	117,317	189,292
1951	. 13,115	2,415	25,270	6,100	32,500	122,350	201,750

bleached straw pulp from the new pulp mill in Valencia is being used in the manufacture of some classes of paper.

"There is no problem in Spain of machine capacity for making paper. As a matter of fact, paper mills are running only to a 60% of their normal capacity. That is why Spanish paper industry has endeavored for the last few years to obtain more national-made pulp.

"There are no vast forests in Spain, but there is quite enough wood to make at least three times more pulp than is produced now. The State-sponsored 'Patriminio Forestal' is converting into woods vast expanses of land that have not been cultivated until now. Pine trees are being planted all along the North coast of Spain, from the French to the Portuguese frontier, and eucalyptus forests are now full grown in the Southwest part of Andalusia. Esparto grass and straw are plentiful in Spain and though the former is being consumed for pulp in its total growth, there is still a margin for new straw pulp mills which are being built."

PORTUGAL

Progress on New Cacia Mill

Population—8,490,000. Annual per capita consumption of paper—14 lbs.

It is hoped that Portugal's second mill which will make pulp as well as a new adjoining paper mill will be in production by the end of 1952.

Direct word from Eduardo Rodrigues de Carvalho, Portuguese industrialist who is board chairman of the new company, Companhia Portuguesa de Celulose, confirms that work is well under way on the new operations and that completion was hoped for by late 1952 if the international situation and other factors permit equipment delivery. This mill is "authorized to make bleached and unbleached chemical pulp, mechanical pulp and newsprint," wrote Sr. Carvalho.

It will be located at Cacia, near Aveiro, which is about 170 miles from Lisbon and 70 miles from Oporto.

Up to now the only mill making pulp in Portugal is a specialty quality sulfite mill, making 7,700 tons last year and exporting about half of it—the Caima Pulp Co., Quinta do Caima, Albergaria-da-Nova. It uses blue gum (eucalyptus) 100%.

The other important even in 1951, according to our information, was "installation of a new machine in the Abelheira factory."

About his own project at Cacia, Sr. Carvalho wrote:

"To this company, which is at present increasing its capital to Escudos 72,000,000, the U. S. Economic Cooperation Administration allocated \$4,359,000,000, the total of purchases of equipment made in the U.S., for which purposes the writer, as chair-



SANDY HILL-KAMYR type of vacuum washers sent to Portugal as part of complete bleach plant manufactured in New York state for the new mill at Cacia being built by Companhia Portuguesa de Celulose. A recent report on the progress of the project is reported by its Chairman of the Board for this issue.

ONE OF SPAIN'S BIGGEST MILLS is this one, with four machines making 125 tens deily of board and paper, owned by La Papelera Espanola, which has several mills and makes half of Spain's production. This mill is in Prat de Liobeant new Barralean in Catalogue.

man of the board, was twice in New York in 1950, as referred to in WORLD REVIEW. 1951."

Our last year's REVIEW carried the report that this mill would make 44,000 tons a year of kraft and groundwood and 30,000 of paper, and that Swenson evaporators, and Sutherland refiners were among equipment ordered in the U.S. A complete Sandy Hill-Kamyr bleach plant—washers, mixers, pumps, etc., have been shipped to this mill from the U.S.

Portuguese statistics issued by the National Institute of Statistics show that it produced 44,230 tons of paper in 1951. It produced 7,700 tons of chemical (sulfite) pulp (one mill). Some of the paper grades, as produced in 1951: Newsprint, 2,200 tons; wrapping and bag paper, over 20,000 tons; printing papers, 4,000; cardboard, 8,600.

Imports of paper by Portugal totaled 13,200 tons, of which 10,700 were printing papers.

AUSTRIA

A Big Modernization Program

Population-6,881,000. Annual per capita consumption of paper-61 lbs.

Most spectacular example of the ECA-Mutual Security Agency European Rehabilitation Program is the investment which has been made is Austria.

Paper has become second only to iron and steel as a leading Austrian export. It accounts for 11% of Austrian exports.

We have interesting reports on Austria directly from officials in the Verinigung Osterreichischer Papier-, Zellulose-, Holzstoff- und Pappen-Industrieller, as we did last year. Also here is a report from the Mutual Security Agency in Washington:

Dr. Joseph E. Atchison, chief, pulp and paper branch, Mutual Security Agency, in Washington, says the Austrian pulp and paper industry is destined to become one of the most modern in Europe within three years. This opinion was expressed on his return from a trip over Western Europe during which he took part in ceremonies for a new Beloit machine in the

PULP and PAPER AUSTRIA—(Short Tons)

	Paper	Board	Mechani- cal Pulp.	Chemi- cal Pulj
1951:				
Production Consumption Exports	287,433 153,615 134,244	74,558 55,836 18,777	116,270 110,001 6,106	299,959 197,125 97,724
1950:				
Production Consumption	263,338 139,724	65,086 51,714	102,905 97,139	275,666 171,776
1948:				
Production Consumption	208,811 130,383	50,406 41,098	76,743 77,564	172,600 128,772
1937:				
Production Consumption	255,890 126,677	70,670 34,619	106,683 85,970	294,963 135,100



DYESTUFFS FOR COARSE PAPERS

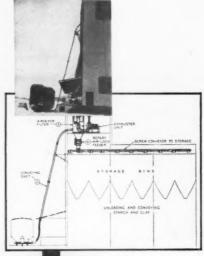


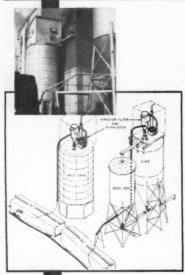
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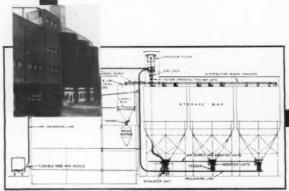


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PAPER MILLS

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Airveyors have few moving parts, with consequent low maintenance. They are used for unloading box or hopperbottom cars, trucks, ships and barges; for conveying to storage or process, and for reclaiming from storage to processing points in the plant.

Increasing numbers of paper manufacturers, using the Airveyor, have found savings pay for this better method of handling bulk-raw materials. They save by purchasing in bulk instead of bags; also in cost of unloading and storing bagged materials. Labor costs are reduced, because the Airveyor requires the attention of only one man. Important from the safety angle is the fact that dusting is climinated.

Each Airveyor installation is custom-tailored to meet individual requirements—none is designed until Fuller engineers have made a thorough study of the operations involved. Result: maximum economy in material handling.

To have Fuller engineers make a study of your requirements, places you under no obligation. Their recommendations, based on findings, may well be an introduction to new high standards of operation efficiency and economy.

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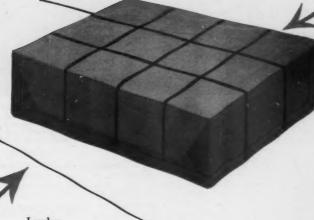
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Karton-und Paperfabrik Mayr-Melnhof & Co. at Frohnleiten, Styria, Austria.

Dr. Atchison says progress in modernizing Austrian mills since his visit 18 months ago has been amazing. "I am fully convinced that with ECA help the Austrian industry will rise in three years from one of the most antiquated in Europe to one of the most modern," he said.

The board and carton plant of Mayr-Melnhof, which installed the new Beloit 110-inch 5-cylinder board machine, had been producing about 20 tons of quality folding board per day when modernization began. Dr. James Harrison, of the Michigan Carton Co., first sent to Austria to analyze the project, and was followed by K. O. Elderkin, manager, Crossett Paper Mills, and Vance Edwardes. ccnsultant, who formed an ECA team for technical help.

The Beloit is capable of 40 tons of folding grades per day. By adding two cylinders and additional driers, it can be expanded to 110 tons. Total cost of the project was \$1,200,000, of which direct ECA aid amounting to \$580,000 purchased U.S. equipment. Dr. Atchison explained this was not in the form of a gift to the company, but an Austrian schilling loan from Marshall counterpart funds. A wastepaper treating and cleaning plant, stock preparation and refining equipment, went in with the machine.

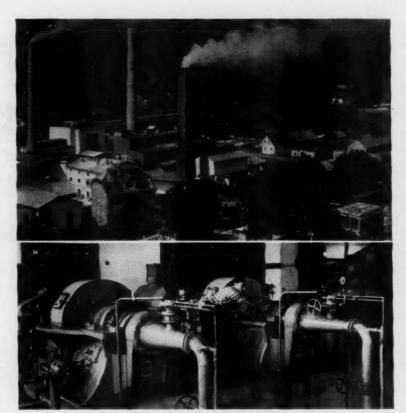
Future plans for Mayr-Melnhof Co. call for equipment for 30 tons of hard-wood semi-chemical pulp per day and 30 tons mechanical pulp per day. These materials will be combined with wastepaper and long fibered chemical pulp for a variety of boards and cartons.

In stops in Germany, Italy, France, Holland and England, Dr. Atchison found the industry having great difficulties with limited raw material, pulpwood, woodpulp and coal. The soft wood shortage, he points out, will continue to limit most



PROMINENT IN AUSTRIAN INDUSTRY

Top row, left to right: ING. WERNER WERENSKI-OLD, Honorary President of the Austrian Paper & Puip Assn.; HANS POPPOVIC, Gen. Mgr. of Bunzi & Bioch A. G.; DR. OTTO HANEL, Mgr. of Polser Zellulose und Papierfabrik, Aktiengesellschaft; Lewer row, I. to r.: DR. EMIL VON LIN-HART, Gen. Mgr. of Neusledier A. G. fur Papierfabrikation; HANS LAMPI, Gen. Mgr. of Leykam-Josefsthal A. G. fur Paier- und Druckindustrie, and GOTTRIED VON STEPSKI, Mgr. of Nettingsdarfer Papierfabrik A. G.



GENERAL VIEW (above) of FRANTSCHACH PAPER MILLS (18,000 tons a year of paper and cellulose) in Lavant Valley of Austria, modernized and enlarged with aid of Marshall Plan funds. A sign at main gate tells of Marshall Plan assistance. Below is a battery of new

European countries. Only hope of alleviating this situation is by increased use of straw, esparto, wastepaper, and fast-growing hardwoods. Already, in Holland 42 per cent of the paper consumed is collected as wastepaper—a high mark for countries reporting.

Most of the sulfite industry is using pyrites because of the sulfur shortage. Mills using elemental sulfur are hard hit by costs. In Austria prices have run \$200 to \$250 per ton for Greek and Italian sulfur. Conversion to prites' burning is coming fast, as equipment is secured. Luigi, in Frankfort, Germany, is building most of these burners.

At the Arland Paper and Sulfite Mills,

AUSTRIA—CHEMICAL PULPS (Short Tons)

	Sulfite Un- bleached	Sulfite Bleached	Kraft Un- bleached	Dis- solving
1951: Production	*** ***	101.004	*****	
Consumption	111,770 66,319	103,774 75,493	25,885 14,817	58,711 40,480
1950:				
Production Consumption	104,914 67,857	104,690 56,672	23,870 16,969	42,192 30,279
1948:				
Production Consumption	86,128 63,816	47,072 36,733	15,974 13,679	23,433 14,544
1937:				
Production Consumption	151,715 79,391	118,243 41,068	25,005 14,641	
Note-Expor	rts are the	difference be is, actually,	tween produ	ection and assumption.

SUTHERLAND REFINERS in operation in Frantschach Mills. The name plates on the machines tell that they were designed by Sutherland Refiner Corp. and fobricated by Valley Iron Works, both of U.S.A.

in Graz, production of paper is doubled and sulfite increased 60%. A complete Fourdrinier wet end made by Sandy Hill Iron & Brass Works of the U. S. A. for a new machine has increased paper production of the mill from 35 to 100 tons a day, says Dr. Ferdinand Wultsch, professor of pulp and paper at Graz University and manager of the mill. The 35 tons was made by three old machines. New machine is for printing and bond and toilet tissue. Dr. Wultsch pointed out Austria law requires planting a new tree for every one cut, and that Austria's forests are great enough to support its pulp needs.

Other ECA-MSA projects:

Increases in chemical pulp, bleaching and paper, at Leykam Joseftshal.

Modernization and expansion in kraft pulp and paper and multiwall bags at Frantschach Mills. A photograph shows new Sutherland refiners here.

A completely new newsprint mill and new pulping plants virtually tripling production at Murtztaler Mill.

Substantial increases in pulp, bleached, and paper, at Leykam Joseftshal.

New unbleached kraft pulp mill for Nettingsdorf Mill, pulp to be sold for multiwall bag and wrapping.

Here is a general review received from Vereinigung Osterreichischer Papier-Zel-

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PULP REFINERS

1952 Review Number

PULP & PAPER

105

AUSTRIA-PAPER (In Short Tons)

	News print	Book and Writing	Kraft Paper	Other Paper Grades
1951:				
Production Consumption	84,007 31,768	110,077 \$6,496	14,564	78,859 50,559
1950:				
Production Consumption	78,494 30,362	101,892 50,240	15,189	67,763
1948:				
Production Consumption	70,929 31,536	69,865 49,040	17,064 12,480	50,952 37,326
1937:				
Production Consumption Note—Exports consumption		121,653 42,292 difference bet	63, 54, ween produc	351

lulose- Holzstoff- under Pappen-Industrieller, Vienna:

"During the last year the Austrian industry made great efforts to carry out its extensive investment program. With initiative and energy as well as by effective utilization of the financial means made available, the progress which has been obtained was quite considerable.

"Since the beginning of Marshall aid the power efficiency was increased on an average by 15% by installation of new boiler plants reducing considerably fuel consumption. Simultaneously, the yearly production of mill-owned electric power was raised by about 28 mill. KWH through erection of counterpressure steam aggregates, whilst the investments in millowned water power stations supply additional 15 mill. KWH per year.

"In sulfite pulp, the capacity of the industry has been increased by about 3,000 short tons per year. Moreover, the pulp industry succeeded for the first time in making full use of its capacity.

"Stock preparation plants for 7 paper machines have been erected and put into operation. In 3 mills new plants for waste paper processing have been installed. Four of the 12 projected paper machines and a board machine have been installed and are already operating, and three other machines have been modernized.

"Compared with 1950, the production increased as follows:

Paper by 9.4%; chemical pulp by 9.1%; mech. pulp by 13.2% and board by 14.8%.

"Export values may be doubled compared with 1950 and nearly quadrupled compared with 1949. In production a shift to the more expensive special grades has taken place which influenced the value of export deliveries.

"As already stated in the last edition of the WORLD REVIEW NUMBER, the Austrian industry follows the principal of restricting exports of pulp and paper in favor of finished products and to give semi-manufactured material within the paper production the highest possible finishing. Therefore, pulp exports have decreased in 1951.

"About 48% of paper production have been exported, the main markets of the Austrian paper and pulp industry being again, in 1951 as in 1950, Italy, Western Germany, Pakistan, Great Britain, Argentine and Brazil.

"Quantities made available for the converting industry and for domestic consumption were increased by 14,210 short tons of paper in 1951 compared with 1950 and by 45,860 short tons compared with

the last normal financial year before the outbreak of the Second World War, that is, 1937. The consumption of paper increased from 42 pounds per capita in 1937 to 61 pounds in 1951. The industry was able to meet additional domestic requirements, especially wrapping paper."

The industry employs some 20,000 workers with another 20,000 employed in graphic arts and paper processing industries—exclusive of the employment in logging. There are 18 paper mills, 13 cellulose paper mills, 4 chemical pulp mils and 68 paperboard and mechanical pulp mills in operation in Austria.

WEST GERMANY

A Great Industry Fights Back

Population—48,129,000. Annual per capita consumption of paper—73 lbs.

The German Federal Republic, or West Germany, has been the home of many notable technical advances in pulp and paper but many of the mills and an important part of its industry was amputated in the postwar division of the country and is now in the Soviet Zone. The tables accompanying this article give 1939 figures for pulp, paper and pulpwood for all Germany, and the comparison with the figures for later years in those same tables for only West Germany, indicates the scope of this loss.

Woodpulp production for West Germany is less than half what it was for all Germany under Hitler in the last year of partial peace. Total paper and paper-board production in 1951 was 1,986,000 short tons, a substantial increase over recent years, but half as much as the Germany of 1939.

We are indebted to Treuhandstelle der

Zellstoff- und Papierindustrie and also to the well known Germany company, Zellstoff-fabrik Waldhof of Weisbaden for our information in this section.

Demand continued to surpass production during all of 1951," wrote Drs. Eberhard Zahn and Muller-Henneberg of Waldhof. "But in the last few weeks of the year there was some softening, especially as concerns rayon pulp. The main reason for this was seen in the dropoff of Scandinavian prices and general tendency to get rid of stocks bought at high prices. The fact that per capita consumption of paper and board is still far from reaching the pre-war figure of 105 lbs., though having increased from 71 lbs. in 1950 to 80 in 1951, shows that in the long run the prospects of future business can be considered with confidence."

Some remarks on the Waldhof company, sent us by Drs. Zahn and Muller-Henneberg, in the absence of the General Director Max H. Schmid, is of

"Owing to the want of coal towards the end of 1950, in consequence of the Korea boom, production had to be reduced in Jan. and Feb. 1951. The difficulties having been overcome by that time through imports of coal from U.S.A., we were in a position to fully utilize our production capacity from March to the end of the year.

"In spite of the strong demand we did not follow the Scandinavians in their price policy, but even reduced our quotations slightly in the course of the year in order to avoid any disturbance of the market and the relapse being the necessary consequence thereof. However, the prices for pulpwood having continued to rise in Germany even during the winter, 1952, we were obliged to increase our quotations, too, in March 1952. At the same time the Scandinavians came back from their top to the level of our new

WEST GERMANY-WOODPULP PRODUCTION

(In Thousands of Short Tons)

	For I	Paper	Rayon & Dissolv-	Straw-	Total	Ground
	Sulfite	Kraft	ing	Esparto	Chem.	Wood
All Germany:						
1939	1.022	130	302	94	1.545	1.150
West Germany:	-,			-	2,0 20	4,
1949	. 343	3	97	23	466	362
1950		1	128	36	610	435
1051	468	1	170	46	604	506

WEST GERMANY-PAPER PRODUCTION

(In Thousands of Short Tons)

	Book & Fine	News	Tissue	Kraft	Paper (Includes other grades)	Paper Board
All Germany:				,		
1939	. 242	504	39	278	2.956	1.057
West Germany:					-	2,001
1949	. 35	140	10	123	983	407
1950		187	15	145	1.258	464
1951		178	18	157	1,438	548

WEST GERMANY-PULPWOOD

(In Thousands of Cords)

	Produced	Imported	Total Received	Total Consumed
1939 (All German)	1,985	930	2.916	3,390
1949 (U.S., British Zones)	876	69	945	844
1950 (U.S., British, French Zones)	1,082	216	1.398	1.290
1951 (West Germany)	1,933	548	2,486	2,116

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prices which we hope will help to stabilize the market.

"We have succeeded in developing a new process for the production of highly bleached strong sulfite pulp for special papers. Our Mannheim works again is operating eight paper machines, the last of which was rebuilt after having been heavily damaged during the war. In cooperation with the Pulptex Co. we introduced the towel automates in Germany and took up the production of the paper needed for same.

"Our affiliated company, the Natronag, began operations in its new paper bag factory at the beginning of 1951, and is now installing a new paper machine in this same plant.

"In 1951, too, the production of our pharmaceutical specialities on the basis of yeast and liver reached for the first time an industrial scale. They were developed by our medicinal department cooperating with our research laboratory. Clinical tests in Germany and abroad proved them to be of good efficiency and sales are increasing."

In Germany, a Marshall Plan project has been proposed for construction of a large kraft pulp mill. It will involve a completely integrated operation with both kraft and semi-chemical pulp mills operating combined with a paper mill and board mill, multiwall bag plant and container pant. This mill expects to use a high percentage of wastewood from saw-mill operations for the kraft pulp. Thus all possible sources of softwood are being exploited. Use of straw holds possibilities for more expansion in West Germany.

Wrote Walker Myers of the foreign staff of NPA, Washington, D.C.:

"German forests in general have been continuously overcut since 1935, impelling a program of gradually reduced fellings in order to balance growth. The pulp industry must, in consequence, rely on imports for an estimated 15 percent of its total wood requirements. In 1950 Finland supplied the largest portion (nearly 400,-000 cubic meters) and lesser quantities were furnished by Sweden and Yugoslavia. On the export side, postwar shipments of pulpwood to France from the French Zone of Germany reached 950,000 cubic meters in 1947 but were discontinued at the close of 1949 with the ending of French cutting rights.

"To assure increasing supplies of indiagenous pulpwood for a mounting pulp output, the West German Government is strongly urging the maximum utilization of all available types of wood. The Government, moreover, has called for a reduction in pulpwood cutting from a yearly rate of 2,232,000 cubic meters during the first half of 1951 to 2,000,000 cubic meters in the forestry year 1951-52. Fibrous materials for paper making are being supplemented by increasing quantities of

straw, the consumption of which was expected to rise 20 percent in 1951, to a total of 200,000 metric tons.

"Although a net importer of wood pulp, Western Germany ranks fourth in European pulp production and third in the manufacture of paper and paperboard. Whether 1952 production of pulp and paper can be maintained at the increasing rate of the past 5 years will depend, in an important degree, upon a continuation of pulpwcod imports, especially from Finland, at a rate equal to or preferably greater than in 1951."

DENMARK

Two New Mills Being Built

Population-4,279,000. Annual per capita consumption of paper-131 lbs.

Little Denmark is right up at the top of the heap in Europe, challenging Britain for highest per capita consumption of paper, usually taken as one good measure of the i. q. of a nation.

But another reason is undoubtedly its proximity to the pulp and paper supply and markets of neighboring Scandinavian nations. Its own pulp production was slightly down in 1951 from 1952, although paper production increased. In woodpulps, it makes only groundwood; about one half of its dozen paper mills are owned by one company, United Paper Mills, which makes about 90% of the paper. Total Danish capacity is 132,000 short tons. The manufacture of newsprint began in 1949, but was down in 1951 from 1950, from 216 to 184 tons, and less was imported.

A 9,000 annual tons straw cellulose plant is planned, backed by a Danish Reconstruction Fund loan established with capital from accumulated Mutual Security Agency funds. Another similar loan is to make possible construction of a beechwood waste cellulose plant in combination with a sawmill. Some small improvements are planned in an existing corrugated board plant.

A sidelight on the Danish industry is the news that Frits Madsen, who was former general superintendent of Ny Maglemalle Mill of DeForenede Papirfabrikker in Denmark, joined B-C International Ltd., British subsidiary of Black-Clawson Co. of U.S. as its sales manager this year. He is familiar with the Black-Clawson Shartle-Dilts lines as he installed and started up its stock preparation system in his former mill in Denmark.

Danish pulp imports in 1951 totaled 79,-500 short tons, down 1.1% from 1950. Paper and paperboard imports were 137,720 tons, down 19% from 1950.

DENMARK-PRODUCTION

	(In Sho	rt Tons)	
	Mech. Pulp	Paper	Paperboard
1939	570	70,000	11,000
1947		78,000	19,000
1950	. 950	91,298	23,507
1951	. 908	98,933	15,235

FINLAND

New Equipment-New Machines

Population-4,012,000. Annual per capita consumption of paper-99 lbs.

Ken Forrest, formerly a production executive with Mead Corp., Combined Locks and other American paper firms, returning from two months as a consultant on pulp and paper expansion projects in Finland, told Pulp & Paper that with the ending of reparation payments to Russia in Sept. 1952, the Finnish industry looks forward to a new era of unhampered business with other nations.

In this section, we also publish a review of the Finnish industry by Matti Valtasaari, information chief to the Central Association of Finnish Woodworking Industries. He states that the forests in Finland could sustain about a 25% boost in woodpulp production (he says 450,000 tons), by going into semi-chemical grades, wallboard, etc.

"Finland is in no way dictated to, or controlled by the Soviet Union, and there are no restrictions on travelling," said Mr. Forrest. "There is a noticeable determination among Finns to work hard and resume their former standing among nations. Forests comprise 71% of its 460,000 sq. mi., and of this, 57% is privately owned. It is using over 660,000 kw. water power and has 290,000 more under construction."

A Finnish kraft mill, Oulu Osakeyhtio, in Oulu, in 1951, set a new all-time European record for production of 124,114 tons. Another record for Finland—in 1951 the biggest Chemi-Pulper unit in the world started up at the first Finnish semichemical pulp mill—Veitsiluoto Oy, Kemi—described in the Feb. 1952 issue of Pulp & PAPER. One of the first mills to have semichemical pulp for sale, its key units are an Asplund Defibrator, Sprout-Waldron refining and the Pandia Chemi-Pulper.

From the standpoint of new equipment



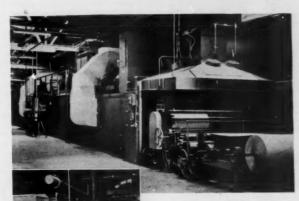
SETS EUROPEAN PRODUCTION RECORD—This kraft mill in Finland—OULU OY., in OULU, set a new all-time European record by making 124,114 tons of kraft pulp in 1951.

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WORLD'S LARGEST SINGLE MOTOR MACHINE DRIVE

BELOIT IRON WORKS, Beloit, Wis., and WEST-INGHOUSE ELECTRIC CORP., Pitrisburgh, Pa., are teaming up to produce three big machines, with world's largest single motor paper machine drives, for ENZO-GUTZEIT OY, one of Finland's biggest paper companies. This installation is at its KAUKOPAA MILL and designed te make kraft liner at 200 to 2000 f.p.m. On loft: Westinghouse 1,250 hp. adjustable voltage single motor drive, probably twice as large as any ever made before for a paper machine. On right: The Beloit 192 in. Fourdrinier machine it drives, showing dry end with 64 paper and 18 felt dryers. Two other Beloit machines and with these drives go in Enzo-Gutzeit's Kotka Mill—this fall, and in 1953. Beloit machine has a secondary headbox; both boxes have Beloit cir-cushioned inlets. Beloit reel has eir cylinders for accurate roll to drum pressure. Heavy duty Beloit winder is designed for 3,000 fpm. There is a 100 hp. helper drive on couch section. Westinghouse says third machine ordered will be a 226 in. Fourdrinier, with two 150 hp. winder drives and helper drives of 3 to 200 hp. range. Winder drive will have Magamp magnetic amplifier providing high amplification of current. Main and helper drives will have Rotorlo controls.

developed in Finland, Mr. Forrest praised highly Erkki Ikavalko, director of the Rautpohja equipment manufacturing firm, saying "he has contributed much toward mill modernization." Mr. Ikavalko has developed a knot reclaiming refiner that increases yield with low power consumption and maintenance. Mr. Forrest also cited a new Finnish portable barker "that should substantially reduce costs" and the first installation starts up this summer in Vietsuloto-Kemi Mill.

Beloit Iron Works of Beloit, Wis., and Westinghouse Corp. of Pittsburgh, Pa., are in the midst of a most unusual program of building three paper machines, all with 1,250 hp. adjustable voltage electric drives, and all of them for the big Enzo-Gutzeit Osakeyhtio. Enzo-Gutzeit, head-quartering in Helsinki, has several mills and is on a big expansion program. It just announced recently its plans for a 110,000 short tons newsprint mill at Tainionkoski.

In our last WORLD REVIEW, we reported startup on Dec. 14, 1950, of the 129in. Beloit Fourdrinier for 50,000 tons a year of kraft liner, served by four Sutherland refiners, at the Enzo-Gutzeit Oy's Kaukopaa mill. (Also the two Bagley & Sewall board machines made for Setova Mills.) The second Beloit-Westinghouse machine unit is due to start up in the fall of 1952 at the Enzo-Gutzeit Kotka mill. And a third one, a 226-in. Fourdrinier, is being built, also for Kotka, to start up in Apr. 1953. It will make light kraft-45,000 tons a year. All three machines have ranges of 200 to 2,000 fpm. Westinghouse announces that the drives are the largest





MATTI VALTASAARI (left), Information Chief of Central Ass. of Finnish Woodworking Industries, who wrote review published in this section on Finland's Industry. KEN A. FORREST (right), Pulp and Paper Consultant, of 901 Garver St., Roaring Spring, Pa., who was in Finland two months on work connected with doubling capacity of Kaukopaa Mill of Enzo-Gutzelt Co.

single motor drives ever made for paper machines, and are believed twice as big as any previous ones.

Mr. Forrest was engaged in "the doubling of capacity" at Kaukopa. He was retained as consultant by the government plant, Valmet Oy, as consultant on the paper equipment it manufactures. This company, known as the State Metal Works, makes ships of all sizes, motors, guns, etc., along with equipment for paper mills

See Page 3 for conversion factors to help you in using this WORLD RE-VIEW: How to transpose Metric Tons to Short Tons and vice versa; Cords to Meters, etc.

THE FINNISH INDUSTRY By Matti Valtasaari

information Chief, Central Assn. of Finnish
Weodworking Industries

The year 1951 was a record year, both in quantity and value, in the post-war exports of Finnish paper industry products. The increase over 1950 of cellulose and mechanical pulp exports was 149,000 tons. In terms of money the result exceeded the 1950 figure by 43 milliard marks (\$186,000,000). Exports of board, wall-board and paper rose 138,000 tons and by 20 milliard marks (\$86,500,000).

Including mechanical pulp, cellulose, board, wallboard and paper as well as converted paper and board products, exports totalled 2,160,000 tons, 15% in excess of 1950. The value of the exports, 99 milliards (\$428,500,000), exceeded the preceding year by 180%.

Pulp, paper, board and wallboard as well as converted paper and board products today represent 65% of the exports of Finnish forest industries. In 1927, the peak year for exports of sawn goods, the ratio was exactly the opposite. This development, due partly to the decrease in supply of large saw logs, is chiefly a manifestation of the transition towards a higher degree of processing.

Cellulose production reached a post-war record in Finland. Of the total produced (1,528,000 tons), 679,000 tons of sulfite and 460,000 tons of sulfate were sold to domestic and foreign consumers, or 1,139,000 tons in all. Of the quantities sold, exports accounted for an aggregate of 1,082,000 tons

Deliveries of wet mechanical pulp available for sale increased to 173,000 tons (dry weight) and of dry mechanical pulp to 58,000 tons, or to a total of 231,000 tons (195,000 tons in 1950). The power shortage due to the dry summer and autumn hit our export pulp mills particularly hard and work was stopped in the majority for several months. Over 33,000 tons of deliveries had to be cancelled. In spite of cancellations the exports of mechanical pulp increased in comparison with 1950, in the first place owing to the exceptionally favorable hydro-electric power situation of the first six months of 1951 and to the commissioning of new power plants. The autumn of 1951 was the driest in the entire

FINLAND—Paper Produced

(In Thousands of Short Tons)

	News	Wrapping	Writing and Printing	Paper (Includes other grades)	Paperboard Cardboard Wallboard
1937	463	121	56	669	172
1949		107	62	623	173
1950	460	123	86	700	237
1951		141	122	756	355

FINLAND-Paper Exports

(In Thousands of Short Tons)

	News	Wrapping	Writing and Printing	Total Paper (Includes other grades)	Paperboard Cardboard Wallboard
1937	422	101	45	572	133
1949		67	43	502	101
1950		75	59	557	153
1951		87	90	609	238

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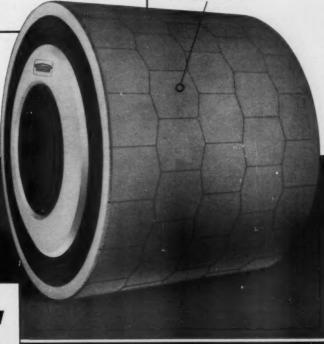
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UROPE

period in which statistics on rainfall have been compiled.

Production of paper (newsprint included) amounted in 1951 to 756,000 tons, an all time peak (the pre-war production record, 677,000 tons was reached in 1939). Exports, 609,000 tons, increased over 1950 by 8%. The production of newsprint was 458,000 tons. Biggest buyer of Finnish paper was the United States. Second was England and next came Argentina, Denmark, Brazil, Australia, Western Germany, France, Egypt and India.

Exports of board accounted for 158,000 tons of the total output of 226,000 tons in 1951. Wallboard production was 69,000 tons of softboard and 60,000 tons of hard wallboard. Domestic consumption of the porous quality was 37,000 and of hardboard 10,000 tons, or 47,000 tons in all.

Post-war Reconstruction

In spite of many difficulties, including the shortage of capital and long terms of delivery for large machinery, very considerable improvements have already been achieved. The steam power stations attached to the mills have been renovated. In the kraft pulp, large recovery units have been installed. To eliminate the loss of sodium sulfate, electric filters have been installed. Three mills have acquired lime-reburning kilns. In the sulfite mills improvements of heating and bleaching have been made. Handling of raw materials and finished products has been mechanized

The paper and board mills have renovated their pulping apparatus. Among machines installed or to be installed in the near future are machines for manufacturing cigaret and condenser paper, tissue paper, greaseproof and kraft paper. The converting mills, which have made steady

PROMINENT LEADERS IN FINNISH INDUSTRY

PAAVO KIVI and HE-IKKI SIHTOLA, directors of Oulu Co., former at Oulu Kraft Div., latter at Sulfite Mill at Kemi. MATTI JAL-KANEN, Mill Mgr. fite and groundwood).
BJORN SUCKSDORFF,
Tech. Director, Kymmene Aktiebolog sul-



FINLAND-Pulp Produced

(In	Thousands of	Short Tons)		
	Mechanical	Sulfite	Sulfate	Total Chemical
1937	904	1.143	483	1,626
1949	659	690	429	1,119
1950	793	791	525	1,316
1951	889	905	623	1.528

FINLAND—Pulp Exports

(In	Thousands of	f Short Tons)		
	Mechanical	Sulfite	Sulfate	Total Chemical
1937	321	908	392	1,300
1949	176	495	343	838
1950	195	566	403	969
1951	231	655	427	1.082

progress in recent years, represent a very high stage of manufacture with their cellulose wadding, sacks and other packing materials, drawing paper and spinning bobbins. The expansion of the wallboard industry's capacity has increased from 30,000 to 150,000 tons in the last five years.

The industrial concerns have their own detailed plans for development of their output on the base of local conditions. Calculated on the yearly growth of the forests it can be estimated that the possible entire increase of the production of mechanical pulp, chemical pulp, semichemical pulp and wallboard together could be 450,000 tons. Depending on financial possibilities the work can be continued on a wider or a narrower scale.

G. P. "GUS" GEN-BERG is one of fore-most authorities in Sweden on dissolv-ing pulp, formerly was technical director in charge of dis-solving for the Swe-dish Pulp Co. He now heads his own company in Stockselling and paper mili



molded corrugated vacuum former and other equipment to make corrugating to Munsjo Aktie Bolag at Jonkoping.

Halvar Lundberg, longtime consulting chemical engineer of Seattle, U.S.A., who has had prominent roles in starting the market sulfite industry in the Pacific Coast area, went back to his native Sweden for a trip in the Spring of 1952. He reported that one of the most interesting developments in that country is the new Kamyr continuous kraft digester, with a 35 ton unit now running at Fenzersfors-Bruks A. B. Kamyr has a 50 ton unit running in Italy and is building others for France, Japan, Germany and Australia. Johann Richter, chief engineer of Kamyr in Sweden, went to Murray Bay, Que., for the International Pulping Conference there in June to discuss the continuous digester.

K. A. Forrest, consulting engineer of Roaring Spring, Pa., U.S.A., was in Sweden two weeks on a European trip recently. "I saw several installation of Nichols-Freeman Flash Roasters burning pyrites in sulfite mills.

There is also a new portable barker designed by Mr. Skoglund in Bollnas, that is primarily intended for use on the woods in conjunction with logging opera-

SWEDEN

Continuous Digester Attracts

Population-7,017,000. Annual per capita consumption of paper-101 lbs.

Sweden is still pre-eminent in all of Europe as a producer of woodpulps and worldwide marketer of these pulps. But pulp production reached its peak in 1937 and in recent years the long-held dominant position of Sweden has been subordinated somewhat by the burgeoning of the North American industry as a world supplier.

But meanwhile more paper than ever before is being made in Sweden. The diminishing raw material source in the Norrland forests has had an effect in curtailing the market pulp production. As stress was placed on conversion, the paper and board exports of Sweden passed prewar levels in 1950 by a big margin and have continued upward since.

The price of Swedish pulp in the world markets is, of course, a subject of special

interest but too uncertain to treat with at length in an annual review. The Swedish industries pleaded for removal of export tax charges to aid them, and they succeeded in getting the export tax on pulp and newsprint removed at least for shipments to dollar countries.

For a review of this sort, it is perhaps more to the point to dwell on the manufacturing and technical developments in Sweden—a country which has been the home of many of the most important advances.

New Paper Milis

In general, it is of interest that two nev paper mills are being built in 1952 in the north of Sweden. One is a 50,000 ton mill at Kramfors. The other, by Bjorka A.B., is going up at Lugnvik. A complete new Black-Clawson (U.S.A.) cylinder 140 in. high grade liner board machine and three Shartle (U.S.A.) stock preparation syswill be in operation in 1953 at Fiskeby Fabriks A. B. near Norkoping 100 miles south of Stockholm. Sandy Hill Iron & Brass Works (U.S.A.) supplied a

Saving

WITH LORAIN

on 1026 CORDS OF PULP a DAY at ONTARIO-MINNESOTA PULP AND PAPER CO.

Kenora, Ontario

Pulpwood handling costs at the Vermillion Bay operations of this well-known mill take a tumble with their two Lorain cranes on the job—a Lorain TL25-J and Lorain 50-J, both crawler mounted and equipped with pulpwood grapples. Here, they are shown working both ends of the operation, in the woods and at the mill, maintaining top production with the "50" handling as many as 1026 cords per 24 hour day.

Pulpwood operators all over the country make Lorains their choice for these reasons...

WORLD'S GREATEST SELECTION...The Lorain line offers 7 turntable capacities, a wide variety of crawler and rubber tire mountings and 5 interchangeable front ends...to meet every job situation...for maximum performance and lower operating costs.

"BALANCED QUALITY"... Lorains have many outstanding features. But, more than that, they are designed and built in all respect so as to give long, dependable, profitable service. They truly have "Balanced Quality"

DEPENDABLE DISTRIBUTOR SERVICE..

Wherever you go, a Lorain distributor is nearby, ready to help you keep your Lorain performing at maximum efficiency. Ready to help you make more money with your Lorain.

you make more money with your Lorain.

Before you buy, be sure to see your Thew-Lorain Distributor!

THE THEW SHOVEL CO.

♦ In the woods, a Lorain TL25-J at Ontario-Minnesota Pulp and Paper Co. is shown loading pulp wood on to sleds, at a roadside landing.

♦ At storage yard, a new Lorain 50-J crawler crane grabs big bites of pulp, handles as many as 1026 cords a day, unloading trucks direct to cars.



THEWLORAIN

CRANES for PULPWOOD HANDLING





DR. BORJE STERNBORG (left), is a leading Technologist with Swedish Forest Products Research Leberatory. He is Director of Paper Technology Dept. in the Field of Fundamental Research at the Laboratory and his work is well known throughout the worldwide cellulose industries.

HALVAR LUNDBERG (right), born and raised in shadow of Swedish mills and for 25 years a leading Chemical Consulting Engineer in U.S., Canada and Maxico, returned to Sweden for visit in 1952. He said he found great interest in new type Kamyr continuous kraft digester new in use at Sulfate Mill of FENGERSFORS-BRUKS A. B.

tions. There is a great deal of interest in Sweden in this machine, which has been in actual operation at a Swedish mill for some months."

Several items of new equipment have recently been developed in Sweden that are becoming familiar as installations go into other countries. For example, the Vibrotor screen, using slotted undercut screen plates with intense controlled vibration and rotary action which get higher capacity than older methods, at higher consistency and low power cost. Bird Machine has brought these to America, with Ingersoll Rand in Canada.

Then there is the Ahlfors Upflow Vibrating Pulp Screen, said to be particularly suited to primary and secondary screening of pulps, and making good records in Sweden. It is being introduced in U.S. by Oliver United, in Canada by Gus Hellstrom of Montreal.

Regarding pulpwood in Sweden, Walker Myers, of NPA, Foreign staff, Washington, D.C., recently said:

"Wartime inroads into its forest resources, largely for fuel wood to fill the deficit caused by the lack of imported fuels, has necessitated that its postwar consumption of virgin wood be carefully adjusted to the annual forest growth. In order to maintain its production and world-wide sale of pulp at a level consistent with demand, the Swedish industry has been obliged to make the fullest wood from the sawmill and the forest is reported to comprise as much as one-third of the fibrous matter that goes into Swedish wood pulp.

"In northern Sweden, where the major portion of the pulp industry is located, excessive cutting has brought restrictions. In southern Sweden where forests during recent years have given up relatively a larger yield than in the northern area, additional timber is largely inaccessible and unavailable to the market. As a result, Sweden was dependent on imports (chiefly from Finland and Norway) for about 435,000 cubic meters in 1949 and

SWEDEN'S WOODPULP EXPORTS TO ALL COUNTRIES AS COMPARED WITH EXPORTS TO THE UNITED STATES

(In Short Tons

Years	Bleached	Unbleached	Bleached	Unbleached	Ground-
	Sulfite	Sulfite	Sulfate	Sulfate	wood
1938 (To All Countries)	304,078	571,077	92,793	575,508	297,420
	156,340	710,709	13,088	70,889	10,600
1945 (To All Countries)	262,146	49,787	43,273	536,114	314,054
	56,496	283,959	28,070	274,429	27,933
1947 (To All Countries)	445,607	530,569	136,701	462,120	223,852
	40,076	218,918	56,282	201,440	12,532
1949 (To All Countries)	578,965	530,448	197,380	496,287	284,350
	42,130	129,902	70,013	106,160	7,547
1950 (To All Countries)	632,082	609,404	250,326	501,324	312,224
	49,350	99,562	89,663	103,932	12,765
1951 (To All Countries)	601,114	526,089	267,647	455,863	326,661
	30,522	51,344	71,765	58,562	6,767

Source: Svenska Cellulosaforeningen, Stockholm.

SWEDEN-Pulp Produced

	(In Thousan	nds of Short	Tons)		
Mech.	Sulfite	Sulfite	Sulfate	Sulfate	Total
	Bleached	Unbl.	Bleached	Unbl.	Chem.
1937 809	514	1,290	96	1,176	3,076
1946 747	556	802	132	777	2,267
1949 700	671	757	223	828	2,479
1950 794	735	831	272	869	2,712
1951 800 Source: Svenska Cellulosaf	772 oreningen, Stockholi	858 n.	319	904	2,853

SWEDEN—Paper Produced

(In Thousands of Short Tons)

	News	Kraft	Fine	Board	(Includes all other grades)
1937	. 312	247	97	149	1.078
1946	. 299	269	141	149	1,120
1949	. 345	302	110	164	1,182
1950		320	111	209	1.299

SWEDEN—Paper Exports

(In Thousands of Short Tons)

	News	Kraft	Sulfite Wrapp'g	Greasepr'f Parchm't	Board	(Includes all other grades)
1937	218	208	127	28	77	706
1946		156	62	19	77	706
1949		201	68	25	39	676
1950		273	79	30	57	803
1051	918	277	85	20	4.4	830

nearly a half-million cubic meters in 1950. Although a net importer, Sweden does ship appreciable quantities of pulpwood to Germany and Norway. Shipments to Norway, however, are largely from bordering timberlands, partly of Norwegian ownership.

"The price of pulpwood in Sweden rose 35% for spruce and more than 50% for fir during the year 1951. Sufficient wood to produce a metric ton of pulp was recently estimated to cost the Swedish producer an average of \$66 to \$76."

Swedish exports of all grades chemical pulp for 1951 showed an approximate decrease of 5% under 1950.

The United Kingdom was the best export customer for Sweden, for all grades of pulp except bleached sulfate. Here, although the U.S. total use of Swedish bleached sulfate was down from 1950, the total was still higher than any other postwar year. It was in export of unbleached sulfate pulp to the U.S. that the Swedish loss was the greatest. For sulfite pulps,

the U.S. dropped from second to fourth place in rank as a customer for Swedish grades.

NORWAY

Modernization—Ammonia Use

Population-3,281,000. Annual per capita consumption of paper-106 lbs.

Norway, one of the leading market pulp producing nations of the world, has made a good recovery after heavy cutting of its forests during the German occupation. Its forests cover 25% of the Norwegian land area, but there is a chronic inadequacy of wood for pulp with strict government cutting restrictions. A substantial supply always is imported from Finland.

Source of the Norwegian statistics published herewith is the Skogindustriens Okonomiske Institutt in Oslo.

We are also indebted to Alf Engelstad,

These 10 BIG Features Make Western Precipitation COTTRELLS Outstanding in the Paper Industry

When considering Cottrell Equipment for salt cake recovery, or any other application in the paper industry, remember this... Western Precipitation Corporation not only pioneered the first commercial application of Cottrell equipment made in any industry, but also pioneered the first application of Cottrell equipment in the paper industry.

Among the vitally important advantages found in Western Precipitation COTTRELLS, the following are particularly important in paper mill installations ...

Sustained Year-After-Year Efficiency: The recovery efficiency of Western Precipitation COTTRELLS does not fall off in service. All parts are of ample design to maintain guaranteed over-all efficiency year-after-year—not for just a single acceptance run.



A Higher Recovery: The horizontal flow design of Western Precipitation Cottrells eliminates collected material falling countercurrent to incoming gas stream. This assures higher recovery, minimum resuspension of recovered material in gas stream.



3 Maximum Performance: Horizontal flow of Western Precipitation COTTRELLS permits use of multiple electrical sections so that voltage in each section can be varied to dust loading for maximum recovery without arc-over or electrical breakdowns.

4 Lower Over-all Cost: When comparing Cottrell costs, be sure to compare total installed cost, including duct work.

5 Simpler Maintenance: Because all interior parts and electrode systems are readily accessible, Western Precipitation Cor-

TRELLS are far easier to maintain and service.

Saves "down" time, saves repair costs.



Greeter Adaptebility: Horizontal flow design permits use of multi-vane dampers in multiple-unit installations. Thus, one unit can be shut off completely to permit maintenance operations without closing down entire Precipitator. Also, the dampers can be used in slightly-closed position to assure more uniform gas distribution.

On single-unit installations, chain curtains assure uniform distribution of gases. Curtains are easily kept clean by shaker mechanisms provided.

7 "V"-Shuped Hoppers: Horizontal design permits use of continuous "V"-shaped hoppers for collecting recovered material.

Steeply-sloped walls in this type of hopper prevent build-up or bridging of recovered material.

Space-Saving Compactness: Not only do their horizontal design permit maximum compactness in Western Precipitation Cor-TRELLS, but various sections of a unit can be arranged for indoor installation in space above cascade evaporators, thus utilizing space otherwise wasted.

All-Weather Construction: Western Precipitation COTTRELLS are built for both indoor or outdoor installation, and this organization has had extensive experience with special construction to prevent excessive corrosion in rigorous northern climates.

More Extensive Experience: Since pioneering the commercial application of COTTRELL Precipitators over 42 years ago. Western Precipitation has consistently led in developing one unique advancement after another. Such features as 4-Point Electrode Suspension that eliminates misalignment of electrodes and reduction in recovery efficiencies... Unusually Rugged Rapper Design that assures proper cleaning of electrodes... Extensive Experience with all types of electrode designs... and many other advantages assure you the ultimate in COTTRELL design and efficiency when you bring your recovery problems to Western Precipitation engineers.

Without obligation our nearest representative will gladly make Western Precipitation COTTRELL experience available to you for solving your particular recovery problem. Why not contact him today?

IMPORTANTI in addition to COTTRELL Electrical Recovery equipment, Western Practical Recovery equipment, Western Practical Recovery equipment, Western Practical Recovery endough and installs the well-known MULTICLONE Mechanical Collectors for hopged-fuel fred beilers. These onits are unusually campact, highly efficient and can be readily fitted into existing plants of minimum installation costs. Write for detailed

Send for Helpful Literature



Main Officer-1817 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA CHICYSER RIDG, NEW YORK 17 * 1 LoSALLE ST, BLOG., 1 N. Lo SALLE ST, CHICAGO 2 * HOBART BUILDING, SAN FRANCISCO 4, CALIFORNIA PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLOG., MONTREAL one of the inventors of the Cross-Engelstad ammonia pulping process, now popular in some U.S. regions, but which has been a continuous process at a Toten, Norway mill since 1935. Mr. Engelstad wrote:

"In reply to your questions, I may say that all of the Norwegian mills have been modernizing their plants more or less to such an extent as it has been possible to get the necessary materials and machinery. Some of the paper mills have also expanded their production to some extent while the pulp mills have been prevented from further expansion because of the scarcity of the wood supply.

"The Borregaard Co. continues their modernizing (photo of its mills, among the largest, was in the 1951 WORLD RE-VIEW). A new central digester room was completed last year and a new screen room is under construction. The alcohol plant using sulfite waste liquor has been expanded to include plants for manufacture of acetaldehyde acetic acid, butanol and butylacetate. There was produced in all in 1951 about 3 million gallons of alcohol and about 22,000 tons of the chemicals mentioned. Their chlorine-alkali plant will be enlarged to a capacity of 15,000 tons of chlorine and 17,000 tons of caustic soda yearly."

A Correction Re Ammonia

In the July 1951 issue of Pulp & Paper we regret that we erroneously stated that ammonia was used irregularly at A. S. Toten Cellulosefabrik in Norway, where Mr. Engelstad, now a consultant, was manager from 1916-50. He served New England mills from 1905-1916.

In calling this to our attention, he pointed out these interesting facts—especially to some ten mills in the U.S. (Maine, Washington and Wisconsin) which in recent years have changed over to ammonia, or definitely plan to:

"The Toten plant operated the process irregularly in the years from 1925 to 1935, because of difficulties in obtaining ammonia. Since 1935 however not a pound of other pulp than ammonia base has been produced.

"The plants capacity is 25,000 tons bleached pulp yearly. In these 17 years bleached pulp of all grades has been produced and in all this time there is received only 1 reclamation on quality and that on glassine on which the company do not specialize.

"In Great Britain the Toten Brand is considered the most readily saleable bleached pulp on the market for Bank, Bond and Manifold.

"However, it was not mine or my coinventor Mr. C. F. Cross's (of Cross & Bevan) idea, through ammonia base to make a more superior fiber to that from calcium base. Our idea was, to make the waste liquor more suitable for converting into useful byproducts. This has also been accomplished, at Toten there are plants for evaporating and drying all the liquor. Fully built out, one expects to obtain 90% of the weight of the pulp as a dry powder.

"During the war, when Norway was occupied, and it was difficult to obtain fuel, the liquor was burnt under the boilers, partly alone and partly together with ALF ENGELSTAD, Consulting Engineer, Nygard, Norway. He writes about ammonia pulping in Norway.



coal, nearly 40,000 tons of 55% liquor was burned. It was operated almost as easily if not as effectively as we operate with fuel oil today.

"To burn the liquor is after all not very feasible, as it cannot be operated economically except when the price of fuel is rather high. However, I dare go on record saying, that when the very highly trained chemists we have today begin real research work with ammonia base liquor, it will not be many years before the waste liquor of today will be the pulp mills main product and pulp the byproduct."

Incidentally, Mr. Engelstad, born in Norway in 1882, a c. e. graduate of Bergen Polytechnikum in 1905, went to America that year to stay 11 years. He was with Oxford paper at Rumford, Maine, Burgess Sulfite (predecessor of Brown at Berlin, N.H.), and was a consulting engineer in Portland, Me. He returned to Norway and the Toten mill in 1916.

Getting back to general information on Norway, Walker Myers of the foreign staff of the National Production Authority in Washington, wrote:

"The pulpwood supply is perhaps the most serious problem of the Norwegian pulp and paper industry, which ranks third in European pulp production. For the industry's near-capacity pulpwood requirements of more than 5,000,000 cubic meters in 1951, only some 3,900,000 cubic meters of the domestic timber cut was allocated. That allotment, moreover, is expected to be reduced in 1952 and succeeding years until a level of 3,200,000 cubic meters is reached by 1954. Norway sup-

NORWAY-Pulp Produced

(In Thousands of Short Tons)

	Mech.	Sulfite	Sulfate	Chem.
1937	 . 599	534	82	616
1946	 . 308	207	46	253
1949	 . 509			488
1950	 . 590			533
1951	 . 611	491	93	584

NORWAY-Pulp Exports

(In Thousands of Short Tons) Sulfite Sulfite Total
Mech. Bleached Unbl. Sulfate Chem
322 298 56 16 370 Total 1937 .. 322 2.2 5.5 1946 91 SB 94 202 õ 1949 16 15 1950 344 236 6 238 369

NORWAY—Paper Exports

		Tons)				
	H	rapping	News	Other	Board	Total
1937 .		100	195	62	25	382
1949 .		63	165	80	17	325
1950 .		82	164	85	30	361
1951		82	152	101	31	366

plemented its pulpwood supply in 1950 by the importation of 325,000 cubic meters preponderantly from Finland with a moderate quantity from Sweden. Receipts in 1551, on the basis of 9 months' reports, are estimated as exceeding 550,000 cubic meters."

Production of paper and board in Norway in 1951 amounted to 500,000 tons, 20,000 tons more than in 1950 and 36,000 tons more than in 1949.

GREECE

Population-7,960,000. Annual per capita use of paper-16 lbs.

No further word was received concerning government plans for pulp and paper mill in Greece, as reported last year, supported by some 10 million cu. ft. of wood annually on perpetual basis, one third soft and two-thirds hard woods.

Writing, bond, board and wrapping, but not newsprint, are made in Greece now, and there is no woodpulp made there.

GREECE

(In Thousands of Short Tons)

								Paper roduced	Wood Pulp Imported
1937								34	26
1946								13	13
1949								32	25
1950								38	33
1951	*							4.3	37

World News Supply Shows Improvement

The world's newsprint supply situation shows real improvement.

During the five years following World War II, Canada added 719,000 tons of annual newsprint capacity, making a total of 5,360,000 tons on January 1, 1951, and by January 1, 1953, additional expansion now planned will add 365,000 tons, according to the fifth annual survey of the world newsprint situation recently completed by the Newsprint Association of Canada.

The survey shows a reduction in the overall shortage of newsprint in 1951 and forecasts that there will be a slightly smaller shortage in 1952. In both years apparent shortages are less than 3 percent of total estimated demand. The estimates of demand are realistic, representing amounts which users would be both willing and able to buy under current restrictions imposed by government authority in some overseas countries.

Nations Fail to Agree

The Uniscan conference recently held in London to deal with a dispute over woodpulp prices having failed to achieve agreement, negotiations will be continued between Scandinavian producers and the various importing countries. The United Kingdom government will then review the position from the standpoint of supply to British consumers. The government might remove maximum price levels fixed for imported pulps if a satisfactory agreement is reached.

The British government, however, has not agreed to remove its import restrictions and the Norwegian and Swedish governments have not agreed to remove their export charges.



LATIN AMERICA

Many New Mills Are Being Built or Projected New Fibers Are Tried from Cane to Banana Stalk

BRAZIL

Mills Search for More Fibers

Population-50,900,000. Annual per capita consumption of paper-12 lbs.

Burke Morden, president of Morden Machines Co., Portland, Ore., U.S.A., made a trip to brazil and other South American nations just before this WORLD REVIEW went to press and he returned with a very favorable impression of the aggressiveness and intelligent operations in that country. One thing that impressed him in Brazil was the large number of varied nationalities running the mills. The mother country, of course, is Portugal, and not Spain, as in case of other Latin American nations.

He said various nationals from Europe have arrived in the past 10 to 15 years, bringing to Brazil their experience and background in different European countries

This is by far the largest country in Latin America and the industry development has in some respects been on a large scale. There are over 50 mills, large and small

The Industrias Klabin do Parana de Celulose built a city and built ground-wood, sulfite and board and new mills (150 tons) literally out of the wilderness at Monte Alegre. Last year Bagley & Sewall shipped a new 145 in. Fourdrinier to Simao Paper Mills, in Sao Paulo state.

Brazil is pushing its semi-chemical and chemical pulping developments, and Cellulose Development Corp. of England is engineering a complete bleached bagasse Pomilio process pulp and fine paper mill for one of the largest sugar producers. Sao Paulo is also a center for cellulose rayon and acetate production, with six plants in the state. The textile industry is carrying out research in the use of the eucalyptus for cellulose. Tire factories use Brazil-made rayon cord. Total acetate and rayon produced 25,000 tons in only eight months of 1951.

At the Mendes mill, Industria Paoeis E. Cartonagem Cia, in the state of Sao Paulo, a 92 inch width Sandy Hill Yankee Fourdrinier tissue machine is operating on tolet tissue, facial tissue and toweling with a rated capacity from 10 to 20 tons in 24 hours depending on the product being made. Four Kamyr groundwood pulp grinders, each with capacity of 40 tons in 24 hours, were built by Sandy Hill for Industrias Klabin.

Latest estimates show Brazil making about 250,000 tons of paper and importing about 60,000 tons. As for pulps, its needs

BRAZIL-PAPER

Chemi- cal	Ground- wood	Chemi-	Ground- wood
 BK CO.	44	145	12
 . 50	44	143	15

in both sulfite and sulfate were reckoned at 194,000 short tons in 1952 as compared with 162,000 in 1951.

The Scandinavian countries consistently have been the principal sources of supply and are expected to meet most of Brazil's requirements during 1952. No undue difficulties have been reported in obtaining supplies from those sources, but prices have reached a high level. If these high prices continue in 1952, it is possible that imports may be at a somewhat lower level than estimated requirements.

During the first 6 months of 1951, according to United States export statistics, the United States shipped to Brazil 4,222 long tons of paper-grade bleached sulfite, 96 tons of unbleached sulfite, 846 tons of unbleached kraft, and 165 tons of bleached kraft,

URUGUAY

First Views of U. S. Equipment

Population-2,535,000. Annual per capita consumption of paper-46 lbs.

Uruguay is the smallest South American republic, but not the smallest in papermaking. It is one of the most advanced Latin American nations and its climate is one of the healthiest. In paper, the latest records show it made 22,865 tons in 1950, and imported 30,797, which ranked Uruguay in 4th place behind the Big Three—Brazil, Argentina and Chile. In 1949 Uruguay made only about 16,000 tons.

But Uruguayan mills have been expanding and they have been a good market for considerable U.S.A.-made papermaking machinery, although last reports showed only five paper manufacturing companies in the country.

The most recent addition is a Pusey & Jones 120 in. paper machine purchased by Compania Industrial Commercial del Sur,

S. A., a subsidiary of Brown Paper Mill Co., of Monroe, Louisiana, U.S.A. The machine was originally built by Pusey & Jones for Kimberly-Clark Corp. at Neenah, Wis., but has been completely reccnditioned and equipped with a second hand 10 ft. diameter MG Yankee dryer to make various weights and grades of MF and MG paper. The machine was being erected this spring.

Sandy Hill Iron & Brass Works, collaborating with a large number of other American suppliers including Reliance Electric & Engineering Co., Sharltes Bros., Noble & Wood, Ross Engineering, Nash Engineering, Cameron Machine, Stowe-Woodward, Foxboro, Lodding, Holyoke Machine and others, equipped and designed an entire new paper mill using high quality bleached straw pulp at Puerto del Sauce, in the Department of Colonia. This mill more than doubled the production of Fabrica Nacional de Papel, S.A., to about 60 tons a day of a variety and weights (30 to 350 grams). Grades are printing, fine and packaging.

Sandy Hill has also supplied a new Yankee Fourdrinier of 103 in. width Industria Papelera Uruguaya S.A.; which is at Montevideo, and has a capacity of 20 tons a day.

ARGENTINA

Starts Making Own Newsprint

Population-17,196,000. Annual per capita consumption of paper-45 lbs.

The two leading paper manufacturing companies in Argentina, both very progressive, have been expanding very substantially.

Celulosa Argentina, S.A., the largest company, was reported in early April to have started up a new newsprint machine destined to make about 35,000 short tons a year. The new machine is at Zarate and was starting about half rate—about 50 tons a day, but should be up to desired speeds by now.

Up to this year very little newsprint was made in Argentina (1,100 tons in 1950; 2,000 in 1951). This is the third new machine for this company in the past three years.

Celulosa Argentina has varied operations in three mills—the two biggest at Zarate and Juan Ortiz, and it uses pine, bamboo, straw and even cotton linters for high alpha pulp. It makes many kinds of paper, including parchment, book, etc.

La Papelera Argentina, S.A., the other big company, has added two new machines at its Bernal mills. It now has eight ma-





NEAR BUENOS AIRES, ARGENTINA these new machines were built for LA PAPELERA ARGEN-TINA S.A., by Sandy Hill Iron and Brass Works (U.S.A.)

AT LEFT—Operating view of multi-cylinder Yankee Board Machine for making machine clased board.

glazed board.

AT RIGHT—Wet end of La Papelera high speed tissue machine showing non-removable Four-drinier with dandy type table rolls and Sandy Hill-Bertrams flow control unit with nozzle type slice.

chines making 25,000 tons a year. Both new machines were manufactured by Sandy Hill Iron & Brass Works, Hudson Falls, N.Y., U.S.A., and at Celulosa Argentina, Sandy Hill equipment rebuilt a modern machine.

One machine at Bernal is a complete sanitary tissue machine 156 in. wide operating at 1200 feet per minute. This machine has a rated production capacity of 30 tons per day of light toilet tissues and toweling.

The second La Papelera machine is a complete 108 in. board machine designed to produce all kinds of folding and standup boxboards, either machine finished or machine glazed. This machine has a potential capacity of about 80 tons per 24 hours and is complete with screens, selective drives, vats, presses, dryers. Yankee dryer, calenders, reel and winder.

There are about 20 other small mills in Argentina.

Despite these additions, Argentina is still by far the largest importer of paper in Latin America—importing substantially over 200,000 tons a year, largely newsprint. On Mar. 28, 1952 Finland agreed to ship paper, newsprint, wood, instruments and motors to the tune of \$150,000,000 in an exchange with Argentina.

ARGENTINA PAPER IMPORTS

(In thousands of short tons)

						Newsprint	All Paper & Paper Products
1947						154	298
1948						133	240
1949						128	256
1950				*		111	214
1951				*		118	211

ARGENTINA PRODUCTION

(In thousands of short tons)

	ood	Paper- Boards	Printing, Book, Writing	Grades Paper & Board
1950	 32	70	57	232
1951	 32	80	65	224

CHILE

Plans Newsprint from Pine

Population-5,916,000. Annual per capita consumption of paper-24 lbs.

Chile is third in rank as a papermaking state in South America, but well behind Brazil and Argentina. It is making nearly 60,000 tons a year and importing about 20,000 tons more. But there are big plans ahead.

The International Bank for Reconstruction and Development in Mar. 1952 granted, through the Corporacion de Fomento de la Produccion, a loan of \$16, million to the Compania Manufacturera de Papeles y Cartones for the construction of a newsprint plant and pulp mill in Chile. Initially, the plant will have an annual output of 12,000 tons of newsprint, expanding in 2½ years' time to 24,000 tons, with a maximum capacity of 40,000 tons. As domestic consumption is 27,000 tons per annum, Chile will thus become an exporter of newsprint.

The above named company is presently the only large paper mill in Chile. Its present mills are at Puente Alto, near Concepcion. In the last year's WORLD REVIEW we reported they made 110 tons daily of newsprint (75% of Chilean needs); kraft, writing, tissue and board (the latter 90% of needs). This company now makes Pomilio strawfiber pulp and groundwood.

A month after this news, came word from the Herty Development Laboratory in Savannah, Ga., that it had made newsprint tests with Chilean insignis pine.

This was disclosed by Richard Moran, head of Pacific Industries Development Corp. who was said to be heading a group of private investors seeking to set up a newsprint mill in Chile that would use Chilean pine for its raw material.

Moran made public excerpts of letters reporting on the Herty Laboratory tests of the newsprint test. These said in part:

The Herty preliminary laboratory run produced newsprint having approximately one and one-quarter times the ability to resist tear, twice the bursting strength, and almost four times the tensile strength of commercially made newsprint used by a Savannah newspaper, a report said.

The Herty report said groundwood produced from Chilean insignis pine produced "excellent pulps."

CHILE-PRODUCTION

	(In 7	Thousan	ds of Shor	t Tons)	
		Mech. Pulp	Chem. Pulp	News Print	Total Paper
1949		14	6	9	52
1950		17	6	28	55
1951		21	8	33	61

"These pulps," the report stated, "were blended with a small percentage of chemical pulp and run into standard newsprint of very good quality. Test results show conclusively that the groundwood is of superior quality to that made in the United States from native grown pines, and requires less chemical pulp in newsprint finishes."

Another newsprint venture in Chile, involving the Halltown Paperboard Co. ownership in West Virginia (U.S.A.) was approved by the Chilean ministry a year ago but no further developments have been reported. Whether there were connections among these various new newsprint ventures was not clear as this issue went to press.

Noting that 60,000 hectares of pine are available near Concepcion, a forecast of Chilean future needs was made by the Corporacion la Fomento de la Produccion, a year ago, as follows (short tons):

	Newsprint	Other Papers	Total
1950	 25,800	41.800	67,650
1955	 30,250	49,500	79,750
1960	35,200	57 200	92.400

GUATEMALA

Makes Lemon Grass Paper

Population-2,803,000. Annual per capita use of paper-4 lbs.

One of the most unusual paper mills is still operating, by last reports, in Guatemala. This is a lemon grass mill which makes a very good .009 paperboard. It has made .035, too. Pictures on these pages, obtained exclusively by PULP & PAPER, show it in operation and show rolls of the finished paper going to New Orleans.

Until Minor Keilhauer, a young industrialist, started Los Cerritos Pulp & Paper Co. with an initial million-dollar investment, there was not a single mill making paper between central Mexico and Colombia. The lemon grass is cropped four times a year, cut with machetes, and there are successive crops every 90 days. Paper is a by-product, after the grass is processed for oil.

Mitchell Thom, former Victoria, B. C., Canada, superintendent, helped start up this mill and operated it until recently. He has returned to the U.S. and Canadian Pacific Coast. Alvin H. Johnson & Co. did the engineering.

Tonnages have varied. Up to 90 tons a month with one shift. An old second hand six cylinder machine is used.

Construction of this mill began in Jan., 1945. Some equipment was purchased from Osborne Paper Co., Fulton, New York, while other units were purchased new from Combustion Engineering and Westinghouse. Paper machinery and auxiliaries were still very difficult to obtain



LATIN AMERICA

in 1945. Installation engineering was under the direction of Ronald Stark who represented Alvin Johnson & Co., New Vork

There are six rotary digesters in Los Cerritos, Guatemala, lemon grass paper mill, each with a capacity of 15 tons of grass, combined with water and chemicals. Direct-connected motors give the digesters six revolutions per minute. The material for the digesters comes from the cutters and a steam condensation process which has removed essential oils sold by the company. Washing, beating and screening follow, preparing pulp for its 6cylinder machine.

The Combustion Engineering boiler plant was engineered for an area of frequent earth tremors and occasional mild earthquakes, with heavier foundations and special anchoring. The steam generating equipment, important to both production of oils and of pulp from the lemon grass, consists of two C-E marine type oilfired boilers (semi-outdoor setting) each of which has a capacity of 9,000 kg of steam per hour at 30 kg cm and a total temperature of 288 degrees Centigrade. The Westinghouse turbine generator unit is a 1000 kw condensing single automatic extraction type, of 400 p.s.i.g.

MEXICO

Population-25,000,000. Annual per capita consumption of paper-17 lbs.

There is a sharp and vigorous trend toward higher production in Mexico and several new mills have started up and more are planned.

Three entirely new paper mills came into production this year. Another was to start later in 1952.

A new woodpulp hardboard-softboard plant began operations.

A new cotton linters plant in the extreme northeast, near the Rio Grande, is producing. Pilot plants are utilizing banana fibers and cane bagasse.

Four additional paper machines for existing mills are being installed or are on order. Also a full-size Pomilio-process bagasse pulp mill for an existing mill.

The government has announced its plans to help finance big newsprint projects in Vera Cruz and in Durango, also a dissolving pulp mill in Chihauhau. And a lumber company in Chihuahua advises that it plans a pulp mill.

Industrialization of Mexico is definitely on its way. Westinghouse, Byron Jackson Pump and others have their new plants. Paper production in Mexico hit the 217,000 3 1192



with the service piping, and completely unobstructed. There are no moving parts in contact with the lading fluid. Available in both natural and synthetic materials for every corrosive or abrasive service

Complete details on this unique principle of control valving in slip-on, flanged, and air-motor operated types are available on request. Ask for Bulletin 500-without obligation, of course.









HERE ARE SOME OF PROMINENT MEN IN Mexico's growing industry (I to r): TOMAS MIER, Manager and owner of Coyoacan Mill, which has installed Reliance (USA) drive on No. 3
-124 in. machine and ordered entire bagasse
pulp mill from Cellulose Development of England; HANS LENZ, head of the Lenz Mills, w added Rice Barton machine in late 1950; FELIX RIBOT, Gen. Mgr. of La Cartonera Moderna, which has added a 40-ton Shartle cylinder machine; CARLOS KINKEL, Mgr. of La Aurora Mill, ordered new machine from Germany: and JOSE DE LA MACORRA III, following in father's footsteps in the industries of San Rafael and Progress and two new mills in Tialanepantia.

ton mark in 1951. It was only 138,000 just four years ago, probably half of that ten years ago! Woodpulp output has leaped upward from less than 19,000 tons in 1937 to 94,000 last year.

A government order last year set aside all the spruce forests of Mexico for exclusive use of woodpulp industries. And now, with plans for a mill in the north, timber experts from Chihauhau are banned.

Any Americans or others who want to invest in pulp and paper industries will find a cocked ear ready at the Nacional Financiera S.A., Mexico's "Reconstruction Corp." The director is Antonio Carillo Flores, and the address, Calle V Carranza 25, Mexico 1, D.F.

Perhaps the most interesting new law in this Indian Republic to the South is one which was passed last year and requires every Mexican to teach two other persons to read and write. This may work wonders in time, in pushing paper demand and per capita consumption.

MEXICO-PAPER PRODUCED

(In Thousands of Short Tons)

	Printing* (no news)	Writing & Fine	Course & Wrap	Tissue	Paper Board	Total (Include others)
1947 1948 1949 1950 1951	17 18 22 27	20 23 25 35	54 58 52 77	4 5 4 13	44 49 45 56	138 147 156 150 217

* There is no newsprint made in Mexico.

MEXICO-PAPER CONSUMED

	(In I	housano	is of Sh	ort To	ns)	
	Printing* (no news)				Paper Board	Total (Includes others)
1948	20	2.3	59	7	47	165
1949	19	27	60	8	49	171
1950	25	32	75	1.2	54	209
1951	29	36	78	16	57	226
· Mexico	has imp	orted al	out 60.	000 to	ns of	newsprint

annually in recent years.

MEXICO-WOODPULP

(In Short Tons)

															Produced	
1937															18,636	
1946									,						27,010	
1947																Imported
1948																32,933
1949																45,000
1950		 . ,	-												77,000	56,000

COLOMBIA

New Machine; also Pulp Plans

Population-11,266,000. Annual per capita con-

It is widely known that a development is being carried on in Colombia by Container Corp. of America at their plant in Cali, Colombia. A new Pusey & Jones machine was to be in production here in the summer of 1952 for .009, bag, wrap and other grades, which was made in the United States.

The Industrial Development Institute of Colombia is investigating possible point 4 assistance for pulping tests on the Upper Magdalena River Valley wood species.

The manager of one of the large paper converting houses in Manizales, Colombia, speaking recently in New York, said demand for paper and paper products in Colombia is increasing both as a result of population increases and because the people are constantly being introduced to new uses for paper. Demand is especially strong for bags, adding machine tape, gummed paper, paper napkins, facial tissues and paper for food wrappings. Consumption of the latter type of paper is expected to increase sharply because of new Government regulations on sanitation. Recent reports indicated paper production of about 6,000 tons a year in Colombia and imports of 46,000. Imports of chemical pulps were 6,000 tons last year.

PERU

Newsprint from Cetico Tree

Population—8,405,000. Annual per capita con-sumption of paper—7 lbs. In a letter from Alfredo Mastrokalo, engineer and chief of the industrial department of Corporacion Peruana del Amazonas, offices at 403 Edificio Concepcion, Lima, Peru, Pulp & Paper has been advised that company has just finished studies to lead to the establishment of groundwood and newsprint industry in

The groundwood pulp is to be obtained from a tree named Cetico (Cecropia sp) and the chemical pulp required will be made out of sugar cane bagasse and/or rice straw using the soda-chlorine process.

The Cetico tree is one of the most distinctive of American tropical trees which grows abundantly along the banks of the Amazonas river.

In the publication entitled "Woods of North Eastern Peru" by Llewellyn Williams (Field Museum of Natural History, Botanical Series, Vol. XV, Chicago, U.S.A.) a detailed botanical description of the Cetico is given.

The production capacity of the prospective plant will be around 12,000 metric tons of newsprint per year (13,200 short tons).

From other sources it was learned that a French newsprint mill-Domene-near Marseilles, has already made newsprint successfully from the Cetico tree, brought from Peru.

In last year's WORLD REVIEW, we published a photo of the Paramonga Mill, near Supe, Barranca, which uses the W. R. Grace & Co. sugar cane bagasse process to make newsprint, cigaret, board and writing papers. The Grace shipping and banking firm has extensive sugar plantations and wants to extend the process. It licensed Sandy Hill to make equipment.

Peru made about 18,000 tons of paper in 1950.

REST OF AMERICA

Much Talk of Bagasse Mills

Populations-Venezuela, 4,986,000; Bolivia. Fopulations-venezueta, 4,305,000; Boutea, 3,999,000; Dominican Republic, 2,121,000; Ecuador, 3,077,000; Cuba, 5,308,000; Costa Rica, 851,000; Haiti, 3,112,000; El Salvador, 1,859,000; British West Indies, 1,327,000; Honduras, 1,534,000; Jamaica, 1,403,000; Dutch West Indies, 1,49,000; Nicaragua, 1,053,000; Panama, dies, 149,000; Nicaragua, 1,053,000; Panama, 802,000; Paraguay, 1,406,000. Annual per capita consumption of paper—Of these, Cuba is highest, 54 lbs. (even higher than Argentina). Dutch West Indies, 21 lbs.; Panama, 19 lbs.; Venezuela, 14 lbs., ranging down to less than 3 lbs. for Bolivia, Dominican Republic, Honduras; less than than 1 lbs. in Haiti

In these other nations and colonies, Venezuela and Guatemala each have three small mills, Cuba has a couple, Ecuador, Bolivia and Paraguay one each, and there is much talk of more mills using cane bagasse. Cuba is the only one producing very much-37,200 tons in 1950, Venezuela being next with 10,000, all others less than 1,000, according to available records.

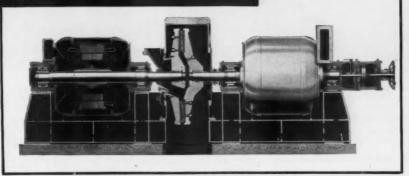
The Agriculture and Industrial Development Bank of Cuba has launched an appeal to back a bagasse plant. Rice Barton Corp. (U.S.A.) has rebuilt a Fourdrinier machine for wrapping for Papelera Moderna S. A., of Havana

Cellulose Development Corp., Ltd. has a technical consulting agreement with the Dominican Republic for a mill there.

Eight million hectares (20 million acres) of good commercial forests, covering 50% of the total area of Paraguay are at present exploited only on the basis of rapid extraction of the country's best timber. Eighty percent of Paraguay's timber is exported as logs and squares, and the remaining 20% of sawn lumber and plywood is produced by a single fac-

Another United Nations report says half of Nicaragua is capable of growing commercial forests. It says three-fourths of the country (16 million acres) is now covered with evergreen forests. Deciduous forests, 2 million acres, cover one-fourth of Nicaragua. Pine and hardwoods are used by some 60 saw mills. But there are no pulp mills.

for best fiberizing and dispersion



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Bauer Pulp Refiners are used in pulp and paper mills throughout the world for fiberizing, dispersing, deflocking, and size reduction. Their preponderate usage is proof of the superior work they are doing.

To get complete information and data on the 400 series of Bauer Disk Refiners, ask for a copy of Bulletin P-2. A request for the bulletin will not expose you to a solicitation. However, if you desire information on your own specific problems, our sales engineer in your area will be glad to consult with you. Write, wire, or phone.

272 BAUERS in use today on semi-chemical jobs alone



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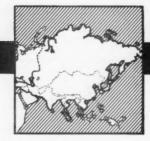
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1952 Review Number

PULP & PAPER

120A



ASIA

A Research Director in India; Japanese Mill Executives and Others Tells of Industry Growth

JAPAN

Seeks Overseas Paper Markets

Population-84,900,000. Annual per capita consumption of paper-29 lbs.

JAPAN'S BIG FIVE IN MARKET PULP

Company and Grades Mills	
Tohoku Pulp Mfg. Co 2	
Kokusaku Pulp Mfg. Co 2	
Sanyo Pulp Mfg. Co	
Nippon Pulp Mfg. Co 1	
Kokoku Rayon Pulp Co 1	

JAPAN'S BIG FIVE IN PAPER

Company and Grades	No. o
Tomakomai Paper Mfg. Co	. 1
Jujo Paper Mfg. Co	. 7
Honshu Paper Mfg. Co	. 6
Hokuetsu Paper Mfg, Co	
Mitsubishi Paper Mfg. Co	. 3

From Yoshio Ichikawa, director of Honshu Paper Mfg. Co., whose six mills rate that company among the three biggest paper companies in Japan, and also from K. Miyahara, chief of the Pulp Section, Gosho Co., Tokyo, Pulp & Paper has received interesting reports of newest developments in the story of the recovery of Japan's important pulp and paper industry.

We are also indebted to C. T. Takahashi & Co., of Seattle and Tokyo, and other correspondence and visitors from Japan.

Wrote Mr. Ichikawa:

"Japan's production of woodpulp recovered from a record low of 227,000 short tons in 1946 to 1,195,000 short tons in 1951, and that of paper from 231,000 short tons in 1951. The increased production has been achieved by rehabilitation and modernization of old mills partially wardamaged, and, above all, by large-scale expansion of existing mills and construction of new mills.

"These projects are still going on. And it is anticipated that capacity of woodpulp and paper will reach approximately 1,640,000 short tons and 1,770,000 short tons respectively by March, 1953. The acute shortage of pulp and paper in the domestic markets experienced for several years after the war's end has now almost disappeared.

"With capacity of pulp reaching the level of self-sufficiency, the demand for imported pulp has diminished except for rayon pulp of high alpha content. As for paper, the industry is ambitious to develop export markets, since the expanded









NEW PICTURES OF JAPANESE MILLS: Top left: IWAKUNI MILL of Sanyo Pulp Co., which is Increasing dissolving pulp output with new high density system; added third paper machine and boilers.

machine and boilers. Lower left: ASAMIGAWA MILL, Hokkaido, of Kokusaku Pulp Industry Co., which is one of the largest pulp producers of Japan.

production capacity will be more than enough to fill domestic requirements. This situation is quite a change as compared with a year ago when paper was still one of the critical items in the domestic markets.

"The most imminent problem for the industry is improvement of quality and reduction of production cost through rationalization and modernization. This is indispensable, if Japan-made paper is to earn satisfaction from prospective overseas customers.

"The industry itself is taking measures to overcome the tight supply of pulpwood already in evidence. An integrated policy is being taken up on a national basis. The policy includes (1) reforestation, (2) development of inaccessible forests, (3) rationalization of usage of wood, and (4) exploitation of hydroelectric source so as to minimize the consumption of wood fuel."

Yoshizo Shimamura, chairman of the Japanese Pulp Industry Association, foresees Japan as helping to relieve world pulp needs. He said:

"In view of the fact that Japan is increasing her exports to Southeast Asian countries, our pulp industry will further demonstrate its ability to contribute toward the nation's economic rehabilitation. Probably it will not be long before our industry is able to help to ease the world-wide shortage of pulp supply.

Upper right: ISHINOMAKI MILL of Tohoku Pulp Co., new makes paper and dissolving pulps, is considering a 120-140 in. Fourdrinier to make prining pages.

nake printing papers.
Lower right: TOYAMA RAYON PULP MILL at Toyama City, an operation of the Kokoku Rayon Pula Co.

"To do this, the industry will not only need more funds, but it is also urgent that pulp interests in Japan unite their efforts to promote new overseas markets for Japanese pulp."

Comments by Mr. Niyahara of the Gosho Co.:

"In early 1951 prices for pulp for rayon and paper climbed up to the highest level since the end of the second World War. Anticipating a prosperous period not only pulpmakers but also paper mills established expansion plans in the second half

JAPAN-PULP PRODUCTION

In Thousands of Short Tons

	210	1 mousun	us of		OHS	
	Sulfite (Rayon)	Sulfite (Paper)	Sul- fate	Soda Oth'r Chem.	Gr'nd Wood	Tot'l
1938	8 113	444	69	3	419	1,050
1941	326	418	84	117	463	1.410
1949	50	188	33	8	314	595
1950	111	230	64	34	386	824
195	190	304	100	85	516	1,195

JAPAN—PAPER PRODUCTION, IMPORTS, EXPORTS, CONSUMPTION

(In thousands of short tons; except per capita figures in lbs.)
Pro-Consumed duced Imports Exports Total Capita 1937 1946 1,600 70 135 1,535 231 229 6 695 701 962 0.1 941 1.286 2 48

Highest in production and consumption
Lowest in production and consumption
Consumer Ministry of International Trade & Industry.





HOW WOULD YOU LIKE TO VISIT THE AKITA MILL in Japan? Here (on left) is its pleasant GUEST HOUSE on the mill grounds. Meals and entertainment are provided. This TOHOKU PULP CO. mill is 300 miles north of Tokyo on Island of Honshu.

WIERD APPEARANCE OF DIGESTER HOUSE on right in this picture of Akita Mill in Japan is result of wartime comountage and it still exists. Exterior was camountaged to deceive U.S. bombing planes. New construction on right of building will house three new digesters.

of 1950, but the prosperous period visited the industries before completion of the expansion. Every sheet of pulp seemed to be sold so easily and quickly, as if it had wings. All Japanese consumers of pulp were anxious to buy materials in both domestic and foreign market.

Highest price average (Domestic)

(per short ton)

Dissolving pulp

Bleached sulfite

US\$250.
UN\$280.
US\$180.-

However the prosperity was disappearing unhappily already in the second half of 1951 and this unhappiness was increased by the completion of expansion towards the end of this year.

"Just as the wave is very high in a shallow sea, so the price fluctuations in the Japanese industry were very great during the unstabilized period. In rayon products we saw viscose yarn fluctuate from \$1.25 to 65 cents a pound, U.S. money, viscose staple from 95 to 35 cents.

"For 1952 only 25,000 metric tons of pulp imports have been contracted for, from Alaska Pine & Cellulose Ltd. This compares with 50,000 metric tons in 1951 from Scandinavian and Canadian sources.

"As for the outlook. A wood law has been passed which will conserve timber. This was necessary because of overcutting in the past. Pulp mills are planning to adopt more sulfate and semi-chemical pulping processes to get more yield and utilize hardwoods."

Touring U.S. and Canadian mills in 1952 were these industry leaders from Japan:

Jun Yamamoto, manager of research and production, Akita City mill of Tohoku Pulp Co., which makes 60,000 tons a year of dissolving pulp. He said it is now adding a new Impco 6-stage bleach plant with Foxboro controls. It is also installing new complete modern central Foxboro instrumentation and controls for all digesters.

Shohei Hayashi, production manager, Ishinomaki mill of Tohoku Pulp Co., which makes 40,000 tons a year—one third paper and two thirds dissolving pulp. His mill is considering adding a 120 or 140 in. Fourdrinier machine to make printing papers. It has a 40 in. and a 42

JAPAN-PAPER PRODUCTION

	(In Short T	ons)	
	1941	1949	1951
Foreign-Style Pa	aper:		
(Total)	1,031,854	419,437	779,765
Printing	421,470	176,482	315,088
Newsprint	294,234	119,775	182,022
Writing.			
Drawing	29,911	10,947	20,249
Wrapping	214,564	61,086	136,849
Cigaret	7,606	4.382	4,927
Miscel.	64,069	46,765	120,630
Board (Total)	407,591	129,972	305,167
Japanese-Style			
Paper (Total)	229,320	146,480	201,762
Total	1,668,765	695,889	1,286,694
Source-Ministry Industry.	y of Inter	national	Trade and

in., both Yankees, and an 86 in. Four-drinier now.

Sanyo Pulp Co. Improves

One of the biggest producers of market pulp in Japan, a leader in rayon type sulfite, is the Sanyo Pulp Co. It sent a report to this magazine of some of its recent improvements and expansion. It is building a new 30,000 tons a year unbleached sulfite mill at Gotsu on the west coast of Japan. Its important Iwakuni mill in a castle town near famed atom bomb city Hiroshima, is being provided with a new high density pulping system. It is increasing dissolving pulp to 210 tons a day from 90. Paper pulp remains at 80 tons. It uses red pine, like Southern pine, in a sulfite system. The six stage bleaching now low density will operate at high density this

Paper mill output is being increased to 21,000 tons a year by mid-1952 with a new 142 in. Fourdrinier. It now has a 48

in. ?ankee and 84 in. Fourdrinier. Two new 25-ton-hr. boilers are being added to 6 20-ton boilers. All burn pulverized coal. Also it has a new 4,000 kw turbinegenerator.

Tetsuo Okawa is chairman, Tsunekazu Namba is president, of Sanyo. Our report came from Chikayuke Inouye, general manager of the Iwakuni mill. Meder Johnson, partner in Jas. Brinkley Co., Seattle, and former Rayonier chief engineer, went to Japan to assist Sanyo in improvements.

Japanese Output Of Rayon-Acetate

Total production of rayon and acetate in Japan during 1951 amounted to 368,–761,000 pounds, representing an increase of 46% over 1950 output of 252,895,000 pounds. The year's output of filament yarn was 137,937,000 pounds, up 33½% over 1950, while the production of staple at 230,824,000 pounds increased 54%.

Japanese Plans

While member firms of the Japan Synthetic Textile Association estimate their 1952 requirements of rayon pulp at 85,000 metric tons, it is understood by the Canadian department of trade and commerce that the Japanese ministry of trade and industry plans to import 50,000 tons during that year, 25,000 from Canada, 10,000 from Sweden, 8000 from Finland and 7000 tons from Norway.

See Page 3 for conversion factors to help you in using this WORLD RE-VIEW: How to transpose Metric Tons to Short Tons and vice versa; Cords to Meters, etc.

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TAIWAN (Formosa)

Straw or Bagasse Expansion

Population-7,500,000. Annual per capita consumption of paper-5 to 8 lbs.

Taiwan, last stronghold of the Chinese Nationalists since Mao-Tze-tung drove from the mainland, was better known in the past as the island of Formosa. It is about the size of Massachusetts and Connecticut.

Technical representatives of Sandy Hill Iron & Brass Works, U.S. mill engineering and equipment manufacturing firm, have been engaged in surveys for work in Taiwan. The Cellulose Development Corp., of England also has done technical work for a Taiwan bagasse or straw project, C. T. Takahashi & Co., of Seattle, U.S., has an office at Taipeh, Taiwan, and has quoted Shartle Dilts Hydrapulping and refining equipment for the largest mill there. The U.S. government in May 1952 allocated \$782,000 for one smaller mill—the Hsin Ying Mill.

From A. B. Henningsen, of Hongkong, comes this up-to-date report, especially written for this WORLD REVIEW:

"Taiwan Pulp & Paper Corp. is the largest paper concern in Taiwan, with the Taiwan Government holding the majority stock. It owns three paper mills, one board mill and one bagasse pulp mill. One of the paper mills enjoys the distinction of being the largest in Taiwan, with a capacity of 13,500 tons per year, while the two smaller mills have a capacity of 3000 tons printing paper and 2000 tons bag paper. Output covers the range from low grade wrapping (made from tailings) to 100% sulfite bond, with newsprint forming some 60% of the total mill production. The board mill has a capacity of 5500 tons boxboard (from rice straw) and 1500 tons boxboard (from bagasse pulp). The bagasse pulp mill has an annual capacity of 25,000 tons bleached bagasse pulp, and is equipped with two 124 in. Fourdrinier multidryer pulp machines. A two-year program to revamp and re-equip the mills at a cost of some US \$1,200,000, is now under consideration and hopes are entertained that in time all mills will be modernized with latest equipment.

"Next in importance to the Taiwan Pulp & Paper Corp. is the Van Hwa Mill whose capacity of 1200 tons per year makes it outstanding among the 22 other mills operating in Taiwan. The Van Hwa Mill has taken the lead in research into the problem of making kraft paper from bamboo, and satisfactory progress is being made, the bamboo being treated by the kraft process. Van Hwa is also projecting plans for improvement and enlargement, and if these plans are finalized, considerable improvement is expected in quality and volume of production.

"The combined production of the smaller mills, including the Van Hwa, is around 6000 tons per year."

TAIWAN-PAPER PRODUCTION

								(L	ı	4	Short	Tons)		
													Paper	Boo	ird
1946°							۰						2,170	1.98	32
1947													6.158	4.38	88
1948													7.932	4.4	77
1949													7.000	4.5	10
1950													9.760	3.8	-9
1951													17.157	6.1	11
2 F.	ır	1	C	14	16	١.	1	q	5	n	1	nchis	ive the	production	fig

For 1946-1950 inclusive the production figures are of Taiwan Pulp & Paper Corp.; figures for 1951 are combined production of all mills in Taiwan Island.

Bagasse Pulp Production-1951-11,870 tons.

HONGKONG-CHINA

Re-Exports Going to China

Populations-China, 463,493,000; Hongkong, 1,800,000. Annual Per Capita Consumption of Paper-China, less than 2 lbs.; Hongkong, 10 lbs.

Hongkong, still a British crown colony and its Gibraltar of the East, is the only tiny spot in the vast Chinese wor'd of the Asian mainland where a ray cf informative light is shining today.

Again this year, Pulp & Paper's correspondents in the Far East report that not a trickle of reliable information comes out of Communist China, where the Iron Curtain was rung down in 1949. At that time news reports reaching Pulp & Paper told of projects for one or two new kraft pulp and paper mills in China and young technicians from that country had been studying processes in the United States in anticipation of the building and operations.

From A. B. Henningsen, head of Henningsen & Co. Ltd., importers and exporters, Hongkong, comes this report:

"Statistics of trade in Hongkong are grouped under two heads as 'Paper, Paperboard and manufactures thereof' and 'Pulp and Waste Paper,' and it is therefore not possible to extract figures of imports for pulp and paper separately. The statistics for 1951 give the value of imports as HK\$182,868,004 and exports as HK\$164,734,924. (The Hongkong dollar is worth about 17½ cents United States currency).

"From this it will be seen that fully 90% of paper and pulp imported into Hongkong is subsequently re-exported (principally to mainland China).

During the first half of 1951 there was heavy demand for all types of paper, with newsprint predominating, however buying interest subsided by mid-year and a period of stagnancy set in. Towards the year's end prices started to weaken, caused by the many months lack of interest and the presence of heavy stocks lying in Hongkong.

"It is difficult to foresee the trend in the coming months as Hongkong's activity in Pulp and Paper is entirely dependent on the demand from China. There have been reports that Communist China is encouraging native production of these commodities professedly with the objective of strengthening the country's economy and reducing foreign imports. Lack of foreign exchange may have been an

influential factor in deciding this policy.
"No information is available as to the condition of the industry in Communist

China," concluded Mr. Henningsen.

THE PHILIPPINES



Two Mills Now-More to Come

PHILIPPINE PAPER MILLS Inc., a new industry in Manila, starting up in 1951, is headed by this group (I to r): ALEXANDER A. ADAMSON, President and General Manager; ALEJANDRO HONTIVEROS, Superintendent; ACHIT INDRADAT, Chief Engineer.

Population: 19,557,000. Annual per capita use of paper, 9 lbs.

New industries in a new nation featured our report a year ago on these islands and further promising developments and expansion have occurred since.

A brand new industry last year was Philippine Paper Mills, Inc., on North Bay Boulevard, Tondo, Manila, now making 15 tons a day of shipboards and colored boxboard on a 4-mould 80-in. cylinder machine, with infra-red drying (48 units, 1 kw each), which Robert W. Stevens, Los Angeles consultant, helped design and start up. Hydrapulper, Shartle jordan and liner unit are major equipment. The mill now produces colored boxboard by Hydrapulper-dyeing, and has a new white vat-lining unit.

This company intends to expand, possibly in newsprint, and Alexander A. Adamson, president, visited the U.S. in early 1952 in April, and continued to Europe to negotiate for expansion.

Vice president is Marcelo Nubla; secretary, Godofredo K. del Rosario; treasurer, Geo. Dee Se Kiat; superintendent, Alejandro P. Hontiveros; technical director, Geo. Athos Adamson; chief chemist, Carlos Mendoza; chief engineer, Achit Indradat; purchasing agent, Adamson Inc., Los Angeles.

The only mill making pulp (bleached bagasse) in the Philippines is still the Compania Celulosa de Filipinas, which made an abortive start before the 1941 invasion, then got going again in 1949 in its Negros operations. It is the only other mill in actual operation during the past year. It mixes 50% bagassee with imported sul-

THE PHILIPPINES-IMPORTS

(In Short Tons)

	Newsprint	Book Paper	Wood Pulp	All Paper and Woodpuly
1947	19,278	1.463		and other
1949	30,151	2.564	221	58,796
1950	24.842	4.646	357	61,552
1951	32,046	9,812	51	71,400

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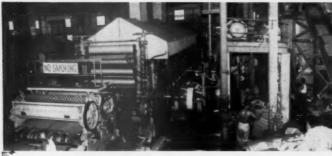
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fite to make fine papers. In the first 7 months of 1951 it made 2,303 tons. It was planning expansion, in Negros, also perhaps a new plant in Luzon.

The multi-wall bag plant purchased by Cebu Portland Cement Co. from National Development Co. had not yet been completely installed this spring. Eduardo Taylor, manager of the cement firm, said his company has expert assistance in studying projects that may use cane in Negros, hemp in Davao, wood in Luzon, bamboo in Bataan.

The International Hardwood & Veneer Co. of the Philippines suspended late last year an undertaking which had started to install a combination of several Japanese paper mills in its compound at Santa Ana,

Manila

Important new developments are surveys and engineering by San Miguel Brewery and Industrial Textiles Mfg. Co. of the Philippines, the latter organized last year to make bags, paper, twine, rope and cordage from jute, kenaf, burlap, apaca, etc. Use of Mindanao wood for newsprint and board is considered at Bislig Bay Lumber Co., owned by Andres Soriano, of San Miguel Brewery, Philippine Air Lines and others. Pampanga Sugar Mills wants to make pulp in central Luzon

Carton and box needs now are locally supplied and imports of these products were banned July 1, 1952, but the islands are still dependent on most other paper imports.

INDIA

New Mills, Built and Building

Population-358,000,000. Annual per capita consumption of paper-1.26 lbs.

The industry has gone a long way in India from the days when leaves and bark were used for writing surfaces. Hand-made paper is produced to this day, not for its qualities but because of its cheapness.

Last year the Pusey & Jones Corp., Wilmington, Del., delivered a 226" newsprint machine of quite modern construction to National Newsprint and Paper Mills Ltd. being erected at Chandni, India. This was engineered through Ebasco Services, Inc. This will be the first newsprint machine in India but unfortunately the mill construction has been delayed and erection of the machine was not expected to start until June or July of this RECENT PICTURE OF PHILIPPINE PAPER MILLS machine in operation. It started up in 1951, making 15 tons a day of chipboard, 76 in. Timil thas 14—42 in. dryers and 3 of 36 in. and also infra red drying, 48 units of 1 kw each. At right is SHARTLE-DILTS HYDRAPULPER, 15 tons, 50 hp., with stock chest, jordan and machine chest beyond. Hydrapulper-dyeing has been

year so that the machine will not go into production until late in the year at the earliest.

This mill with a capacity of 30,000 tons a year, will use sabai (Boswellia Serrata) and bamboo as raw materials.

India is exploring all avenues for the development of newsprint from materials available in the country, and the Herty Foundation laboratories in the U.S. have been carrying on experiments with sabai and bamboo. The Indian government is subsidizing the project.

Here is a commentary on the industry in India prepared especially for this WORLD REVIEW by the head of papermaking work in the Forest Research Institute at Dehra Dun. Its laboratory is one of the most complete for papermaking in the world, all machinery being built by Sandy Hill Iron & Brass Works, Hudson Falls, N.Y. It is designed to make Fourdrinier and cylinder papers, machine finished and glazed. It has 15 to 20 tons daily capacity, equipped with Sandy Hill Bertrams flow control unit, suction couch, Yankee dryer and standard dryers, sizing equipment and vats.

Here follows a glimpse into India's industry, written in Dehra Dun:

Paper Industry of India

By R. V. Bhat

Officer in Charge, Cellulose & Paper Branch, Forest Research Institute, New Forest, Dehra Dun, India (Written especially for PULP & PAPER)

Although hand-made paper has been produced in India for centuries, it was in 1870 that the production of machine-made paper was commenced when the first paper mill was established in Bengal. At present there are 17 paper mills and 17 board mills. Of the 17 paper mills, one started the production of cigarette papers toward the end of the last year and six contemplate expansion of their plants. Three new units have been planned for producing paper and newsprint. Two were expected to commence operation during 1951-52 and the third, designed entirely for the manufacture of newsprint, may go into production

PAPER PRODUCTION

(1	n Tons) 1946	1950	1951
Printing & Writing	64,900	70,155	79,263
Kraft Wrapping	10,433	9,095	17,103
Other Wrapping	5,255	5,524	8,384
Duplex & Triplex	8,849	9,427	11,450
Pulp Boards	3,848	5.155	8,255
Other Boards	5,890	4,361	4,342
Specialties	6,824	5,190	3,118
TOTAL	105,999	108,907	131,915
Straw Boards	14,727	21,820	26,804

INDIA PEQUIPEMENTS

(Govt. Estimates of		Cons)
,	1951-52	1956-57
Bamboo	370,000	625,000
Sabai grass	90,000	160,000
Rags	45,000	75,000
Others	80,000	140,000
Cereal straw	80,000	140,000
Softwoods	60,000	100,000
Total for pulp	725,000	1,240,000
Chemicals	250,000	400,000

in 1952-53. A paper mill in Bihar has recently installed a plant for the production of chemical pulp from bagasse by the Celdecor-Pomilio process.

Bamboo and sabai grass (Eulaliopsis binata) are the chief fibrous raw materials used in the Indian paper industry. Rice straw, bagasse and some grasses are used for the manufacture of strawboards. Writing and printing papers, typing and duplicating papers, envelope paper, blotting paper, kraft paper, cigarette paper, blue paper for match boxes, art paper and board, and Duplex and Triplex boards are manufactured in the paper mills. Straw boards, mill boards and paste boards are manufactured in board mills. Pulps are manufactured in the same mills where paper and board are produced. Only one mill is using the sulphite process for the digestion of bamboo. Other mills use the sulphate process for this digestion. The soda process is generally used for the digestion of sabai grass.

Paper mills work to their full capacity whereas there is a great disparity between the rated capacity of the board mills and their production of boards due to the lack of sufficient supplies of the fibrous raw materials. The production of paper and paper board was 87,662 tons in 1940-41, 105,993 tons in 1946, 103,195 tons in 1949 and 110,400 tons in 1950. The production of strawboards, mill boards and paste boards was 17,810 tons in 1948 and 19,585 tons in 1949 although the total annual rated capacity of the board mills is 45,000

The present annual consumption of paper of all kinds excluding newsprint is are you opening up sales opportunities?



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BLEACHED BAGASSE PULP MILL, 20 tons a day, was started up by Cellulose Development Corp. of England, for Rohitas Industries Ltd., at Dalmianagar, Bihar, India. Accompanying article describes this first continuous pulp mill in India.

UPPER LEFT: Genera view of Bohtas industries Ltd.

UPPER RIGHT: Temporary feed for begasse to Disintegrator.

LOWER VIEWS, LEFT TO RIGHT: Steam inlets to Celdecer Digestion tower; Gas chlorination in this 3-tube tower followed by alikaline treatment isolates cellulose; One of 4 Celdecor-Paxman low submergence rotary vacuum filters for washing and thickening pulp.

about 175,000 tons. The annual consumption of newsprint is about 60,000 tons.

Institute Research Makes Expansion Possible

Dr. Bhat, author of the above article, also told Pulp & Paper that the expansion of the industry has been due largely to the work carried on by the institute on the utilization of bamboo and sabai grass.

Dr. Bhat, in collaboration with Narendra S. Jaspal, recently carried out experiments in the use of the castor oil plant as a fiber material and it was determined that the sulfate process would be more suitable than the soda process and that the plants, grown primarily for seed, should be a cheap and relatively abundant raw material.

Ranjit S. Hall, commercial assistant to the High Commissioner for India, Ottawa, writes:

"The development of this industry is closely linked with the utilization of forest resources and the use of bamboo as an industrial raw material for pulp in place of softwoods is an outstanding achievement. Sabai grass, which has gained prominence in paper manufacture, grows chiefly in Punjab, Uttar Pradesh and Biher."

Production of bleached bagasse pulp, previously referred to, is the accomplishment of Rohtas Industries, Ltd. at Dalmianagar, Bihar, a mill of a 20 ton-perday capacity, and second of its kind in the world. Its only predecessor in the field is Cia de Celulosa de Filipinas in the Philippines.

India's first all-continuous pulping plant was designed and built by Cellulose Development Corp. Ltd., Hatch End, Middlesex, England, along the lines of soda-chlorine plants already pulping straw elsewhere. The pulp turned out by Rohtas is being used chiefly in high proportions mixed with bamboo in white surface of duplex and triplex boards. These boards are converted for playing cards, fine art boards and cigaret cartons. Until two new paper machines have been installed, Rohtas plans to restrict bamboo production and use more bagasse.



PAKISTAN

Builds Bamboo Kraft Mill

Population-80,000,000. Annual per capita Consumption of Paper-three-fifths of a pound.

Construction of a 100-ton mill in the Chittagong hill tracts at a place known as Chandraghona, 26 miles up the Karnafulli river from Chittagong, is the No. 1 project in the industry this year in Pakistan.

Fine and superfine papers will be the output of this mill, expected to start operating early in 1953.

Kuljian Corp., engineers and constructors of Philadelphia, is engaged to design and purchase equipment for a paper mill black liquor recovery unit in Pakistan, for this mill. The recovery system being furnished by Combustion Engineering-Superheater, Inc. will produce 50,000 pounds per hour of steam at 425 p.s.i.g. 775° F. total temperature.

The mill will utilize bamboo and the sulfate process will be followed. The plant costing 4,000,000 rupees, is expected to meet the bulk of Pakistan's requirements. Although financed by government in the first instance, the project has now been turned over to Pakistan Industrial Development Corp., a government company established to set up heavy industries. A public company will eventually be formed to run the mill under the aegis of the corporation.

Preliminary investigations are determining prospects for a newsprint mill. A species of wood from Sunderbams forests in Eastern Pakistan has proved suitable in laboratory scale tests, and the corporation is now making arrangements for having this species subjected to tests in Canadian, U.S. and European laboratories. A survey is being made to initiate a forest management program to insure perpetuity. The newsprint project will be proceeded with, providing tests are favorable.

The corporation is also establishing a high grade paper mill at Nowshehra in the northwestern frontier province of Western Pakistan, and a strawboard mill in the Punjab.

PAKISTAN-PAPER IMPORTS

	In Short Tons
Grades	1950 1951
Wrapping, Packing	6,226 1,618
Printing inc. News	8,871 11,255
Writing	
Blotting	633 31
Other Papers	2.126 2.289
Paperboards	.,
Boards	3,080 3,497
TOTAL	23,516 21,228

REST OF ASIA

Activity in Sumatra, Turkey

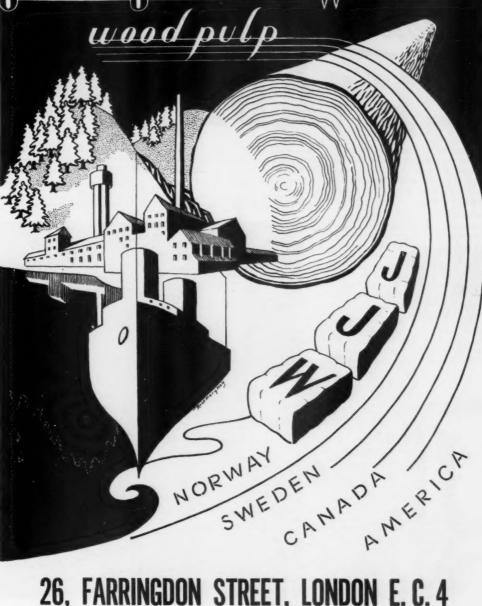
Populations: Indonesia, 73,000,000; Indo-China, 27,000,000; Thailand, 18,836; Turkey, 20,950,-000; Arab League, 30,000,000; Ceylon, 7,500,-000; Israel, 1,350,000; British Asia, 14,000,000. Per capita consumption of paper: British Malaya 15 lbs.; Israel, 8 lbs.; Turkey, 4 lbs.; Thailand, 2% lbs.; Arab States, 2 or less; Burma, 1% lbs.; Indo-China, % lb.; Ceylon, 3 lbs.

Efforts to get information from other nations in Asia—what remains outside the Communist orbit—has not been productive. However, there does seem to be some definite activity continuing in the Republic of Indonesia to establish a kraft pulp and paper project on the island of Sumatra, where pine should thrive.

Israel has shown interest in pulp and paper development, and Turkey, mostly in Asia and with a foothold in Europe, is rapidly developing. It was listed as making 20,000,000 tons of paper in 1950; of increasing woodpulp output by almost double to around that figure and Sandy Hill reports making a technical survey in Turkey.

South Korea may have made about 9,000,000 tons of paper in mills before hostilities there, as estimated, but it is doubtful if much paper has been made in the last couple years. Indo-China and Indonesia were each listed as making about 2 million tons in a recent year, Thailand, about 1,500,000. What they are doing now is not known, but even such production marks are very low in view of the populations of many millions involved.

The Indonesia government plans a mill in the district of Takengon, Middle Atjeh, in northeast Sumatra. Selected site is Aek Naoli, near Toba Lake. JOHNSEN JORGENSEN & WETTRE LTD.



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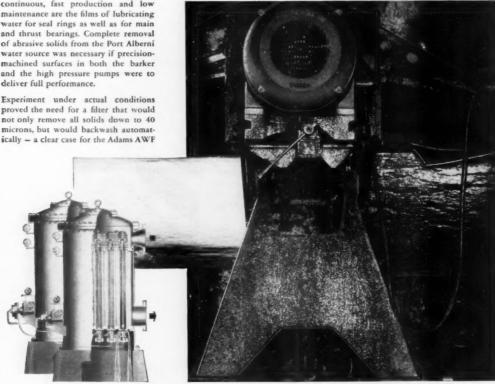
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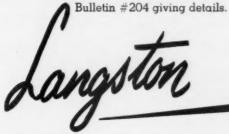


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AFRICA

Snakes and Lions Give Up! A Boer Mill Builder; Touring Editor; Congo Engineer Tell of Big Plans

SOUTH AFRICA

New Mills are "Mushrooming" Population—12,645,000. Annual per capita consumption of paper—37 lbs.

Most notable development in the industry in South Africa during the past year was expansion of the bleached kraft pulp and paper mill at Springs, in the Transvaal, operated by South African Pulp & Paper Industries Ltd., and progress in construction of its new unbleached kraft pulp and paper mill near the mouth of the Tugela River in Zululand, north of Durban.

J. E. Henderson, general manager of the company, advises Pulp & Paper the Zululand mill will be in production the end of 1953. Output of the mill at Springs is about 55 tons a day. By the end of this year bleached pulp and paper will be increased to 100 tons a day.

South Africa may soon have a newsprint producer, using pine from eastern Transvaal. Canadian experts have been asked to advise. Much will depend on their recommendations. Proposed location is in the Sabie district, where 50,000 acres of pine have been planted. Another 45,000 is to be planted later.

Courtaulds of England, Snia Viscose of Italy and Industrial Development Corp. of Johannesburg plan a dissolving woodpulp mill at Durban for export to European rayon plants, using eucalyptus, and maybe, wattle.

There are four mills in the Union of South Africa, producing about 40,000 tons a year, half writing and printing. Kraft and board comprise most of the remainder. The Union manufacturers about 50% of needs in writing and printing papers, 7% in kraft paper and 23% in paperboard. Newsprint has to be imported, mostly from Sweden.

Raw materials consist chiefly of pine, wattles and bluegum, waste paper and imported pulp. The industry employs about 1600.

Latest statistics show imports of paper, books and stationery were valued at \$33,-000,000. In 1949, 50,000 tons of paper was imported, 2,000 tons of chemical woodpulp.

Union Corp., which operates the existing mill at Enstra and the mill under construction on the Tugela River, completely reconstructed its Enstra operation recently, installing the Pomilio process.

South African Pulp and Paper Co., at Springs, has bought from Sandy Hill Iron and Brass Works and placed in operation, a grinder, a complete paper machine drive of selective type and miscellaneous equip-



HANS BAARS, South African Mill Builder and Engineer, sent these new pictures in SOUTH AFRICAN operations:

TOP LEFT: Dusting plant of Waste Paper Recovery Association S. A. (Pty.) Ltd., Johannes-burg.

LOWER LEFT: New TROMAG horizontal drying machine for suitcase fiber and presspan at the mill of Measrs. Trans-African Paper Products (Pty.) Ltd., Boksburg. This replaces outdoor drying.

ment for modernization. A Kamyr wet machine was purchased through Sandy Hill and furnished by their Canadian associate, Paper Machinery Ltd. of Montreal.

One of the problems in South Africa has been scarcity of raw materials. If someone could develop a good pulp from the abundant wattle he would lay the foundation for a successful industry. It is now used by the Masonite factory at Estcourt.

Total consumption of paper in South Africa is more than 200,000 tons a year, of which about 60,000 tons is newsprint.

Here follows a colorful report on South Africa—written especially for this issue —by an engineer and builder of mills in that country:

SO. AFRICA IS LAND OF MILLS, NOT LIONS

by Hans Baars
South African Pulp and Paper Engineer
(Written Especially for this
WORLD REVIEW)

South Africa is no longer a country of lions and snakes, which one can still see in the unique Kruger National Park TOP RIGHT: View Inside South African Government Printer's Works linotype Section at Pre-

LOWER RIGHT: Main parts of 150 sq. ft. vacuum filter made in South Africa, and designed by Mesars. Celdecor Africa (Pty.) Ltd., Benoni, Transveal.

where they live free, but South Africa is a supplier of products and materials for the world market. The South African engineering trade has grown from a well organized mining industry to an industrial producer of interesting and increasing importance.

The paper industry in South Africa is shooting out like a mushroom, and mills which were only on the drawing board a year ago are now taking shape.

South African Pulp and Paper Industries Ltd. in the Transvaal started up a rebuilt fine paper machine, and are working hard to increase the capacity of their pulp mill. The building for a large new Walmsley paper machine is ready and two 8-ton cranes are being mounted for erection work. The purchasing of pulp has been a principal trouble for the South African mills. Little pulp was paid for in dollars. When the Swedes offered at lower prices for payment in dollars, it brought objections from the young South African industry.

South African Pulp and Paper Industries Ltd. have struggled through with their own produced pulp. The quality was improved by introducing cooking with sulfate liquor, and has been supplemented with waste paper.

Waste paper has temporarily become South Africa's No. 1 papermaking raw





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AFRICA

material. Collections were intensified, the government even taking part in the campaign; prices were fixed for the various qualities, which, however, are not so much sorted out as an old papermaker is used to and a young one would like to have. Low grade waste paper brought technical difficulties.

South African Board Mills started up their new Shartle-Dilts Hydrapulper and Hydrafiner stock preparation plant. Their new multivat board machine gave some teething troubles but today is working fine, and the mill is producing nearly 100 tons per day of cardboard on two machines. Their semi-chemical pulp plant will soon be ready and this will replace a quantity of waste paper, which will be transferred to a second mill they are building in the Transvaal.

The local production of suitcase fiber will soon make South Africa entirely independent from imports, when the new mill of S. A. Adamas Fibreboard and Paper Mills (Pty.) Ltd. started up this May. They will also make board for the shoe and car industries. Their colleagues in the Transvaal, Trans-African Paper Products (Pty.) Ltd. have installed a German TROMAG horizontal drying machine. This mill not only supplies South Africa, but sends quantities to other African territories and overseas.

Celdecor Africa (Pty.) Ltd., consulting engineers of Benoni (Transvaal), and its managing director Dr. Giuseppe Raimondo, persuaded South African sugar magnates to go ahead with the utilization of can bagasse for papermaking. The first will be a group connected with South African Board Mills so that their semichemical pulp plant will use wood and bagasse.

A second group established the Ngoye Paper Mills (Pty.) Ltd., to build a mill at Felixton, Zululand. The buildings were to be completed in June 1952, and machinery has been arriving. It will operate alongside a sugar mill, but will have its own power plant. On their combined paper machine they will make fluting and linerboard for the corrugating industry.

Cellulose Products Ltd. in Johannesburg has increased output, and has added thin wrapping paper to its range of qualities. They are now installing a modern waste paper pulping plant.

South Africa grows several vegetable fiber plants and they may become papermaking materials. Of cotton waste, there seems enough already to make industrialists think of making rayon pulp from it. It is surprising that use of cereal straw for board making has not been realized in South Africa yet. It seems the experts have not been able to get together to solve their difficulties, and some official regulations are in the way of utilization of straw for industrial purposes. However, agriculture is getting better organized on a scientific basis. This will eventually result in a larger surplus of straw. Some day

South Africa will be making paper and board from straw, notwithstanding the large potential resource in sugar cane. Bagasse is in one part of the country 1,000 miles away from where the wheat grows.

Studies for a newsprint industry in South Africa are advancing successfully. A very nice sheet from pulps made from South Africa-grown wood has been produced at a trial run. Farmers are planting trees in many places, and it is anticipated that in about ten years' time there will be sufficient from forests to keep a newsprint plant running.

Each new pulp industry in South Africa will be faced with a water problem.

(A Celdecor Africa Ltd.—engineered mills which started up over a year ago was the suitcase fiber mill at Boksburg, reported in last year's WORLD REVIEW).

South Africa Firms

Total production of paper and paperboard in the Union in 1951 was approximately 46,000 tons.

Contemplated production in the Union this year is 52,000 tons, the increase being mainly in printing and writing papers. Mills under construction will increase production to about 110,000 tons by 1954, and about half will be in kraft.

MIDDLE AFRICA

Many Pulp Mills Envisaged

Populations—Belgian Congo, 11,259,000; British East Africa, 11,330,000; Camerons, 3,006,000; French Congo, 4,004,000; Kenya, Uganda, Tanganyika, 18,409,000; Mozambique, 6,116,000; South Rhodesia, 2,022,000; Reunion, 242,000. Annual per capitu use of paper: Belgian Congo, South Rhodesia, 5 lbs.; Reunion, 4 lbs.; Kenya, Uganda and Tanganyika, 1½ lbs.; all others, less than one pound.

A Miller Freeman Publications editor, on a recent tour of Africa for a companion publication of Pulp & Paper, obtained for this WORLD REVIEW, some real "live-wire" reports of pulp and paper enterprises in the Congolands—Belgian Congo and its neighbor, French Equatorial Africa (French Congo).

This has been augmented by exclusive reports from a representative of American Rolling Mills (ARMCO) of Middletown, O. Jean Reumont, general manager, ARMCO Leopoldville, subsidiary of ARMCO Paris, in turn a subsidiary of ARMCO International Corp., the worldwide arm of the Middletown company, describes two mill projects and the hopes to build a successful one base on use of the papyrus plant.

And from Mr. Baars, who wrote the preceding report on South Africa, comes news of two new mills actually realities—apparently one is operating, the other soon will be—in Rhodesia. He also mentioned possibility of bagasse mills on islands in the Indian Ocean—Mauritius (British) and Reunion (French).

The French apparently are very active in plans for development of pulp industries in equatorial Africa. S. A. La Cellulose Tropicale, a new French firm in Paris, writes that it wishes to interest an American firm in development of tropical wood in Africa. It hopes to have a pulp or cellulose mill in the Cameroons. This territory, north of the Congo, is said to

EQUATORIAL AFRICA— IS IT NEW PULP-PAPER LAND?



In most of the Middle African territories shown on this map there are new mills already built or projected.

Papyrus grass on the shores of Lake Tanganyika may be the raw material for a Pulp Mill which we already envisage on this map, at work at LAKE KISALE.

Below, at the bottom of the map, you will see we show two actual new mills. UMTALI PAPER MILLS, in Rhodesia, is a joint undertaking of C. Davidson & Sons, of Scotland, paper and board mills, and British Plaster Board, Ltd., of

Just above Umtall is the other new mill, RHODESIAN PULP & PAPER INDUSTRIES, which will make writing and printing papers and fiberbagrids.

The French have big plans for mills in FRENCH CONGO and the CAMEROONS. Also farther north—off this map—in Dakar and the lavery Coast. They would mix tropical hardwoods and softwoods.

A printing firm in MOZAMBIQUE (Portuguese East Africa) announced plans for a mill there, using papyrus grass, cane, sisal and/or other waste. Out in the Indian Ocean on the British Island, MAURITIUS, and French Island, RE-UNION, mills may use cane.

have over 120 million acres of forests with an average of 80 tons of wood per acre.

Pulp & Paper was unable to obtain new information this year from the Industrial Office of Colonial Pulp, which was created last year in Paris by the French Ministry of Overseas Territories, and was reported to have already a pilot plant or a mill building on the Ivory Coast and planned other projects in the French Congo, the Cameroons and French West Africa (Dakar), using a mixture of hardwoods and soft.

Several mills in the Belgian Congo, using papyrus grass, are being discussed.

First Hand Reports from Congo

But let us start with our own first hand report—a Miller Freeman editor, Max Holzinger, in Africa, wrote:

"I ran into something interesting to Pulp & Paper readers in Belgian Congo. There is a concession for using papyrus grass growing on the banks and in shallow waters of Lake Tanganyika, which is between British East Africa and the Belgian Congo. In harvesting, the operators will be forbidden from disturbing roots and lower stalks, so they will live and grow again. I am told it makes a very high quality pulp. I couldn't verify a report that dredges with underwater rotary blades would cut it, hoisting it to a deck for bundling.

"Papyrus grass is the kind the Egyptians used to make their scrolls out of.

THE SMITH & WINCHESTER MFG. CO.

PAPER MILL AND PAPER BAG MACHINERY

Plant and Offices

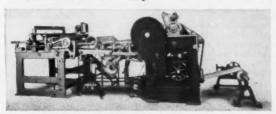


South Windham, Conn.



MULTI-WALL TUBER

For the production of single and multi-wall valve notch tubes for sewed valve type bags. Machine built in 2 sizes, 20" and 26" face; tubes, 26" to 50" long.



ROTARY SPOT CUTTER

Rotary Cutters for accurately handling large quantities of stock in finishing room. When equipped with patented photo-electric compensator, will accurately spot-cut pre-printed traveling webs. Built in 40", 50", 60", 71" and 83" widths. Layboy and stacker may be furnished.



SHOWER PIPES

The famous S & W "Rainstorm" Shower Pipe for greatest effectiveness and maximum economy.

WEB CONTROL

Fully automatic electric eye, side register control or web feed. Manual control can be supplied.



NO. 10 TYPE TUBER

For pasted bottom, multi-wall tubes. Used in connection with S & W Bottomers or producing standard satchel bottom or valve bag. Fully automatic or manual control for web feed.

Complete information on any of the above equipment on request.

SERVING THE PAPER AND PAPER BAG INDUSTRY SINCE 1828

Modern, efficient machines for high-speed operation, large volume production and lower unit costs in the manufacture of paper and paper bags. Smith & Winchester equipment is custom-built to your specific requirements.



MODEL "E" UNDERCUT TRIMMER

The S & W Undercut is the only undercut trimmer made. The Model "E" is newly designed for fast, effortless, accurate cutting and safe operation. Retains the outstanding features of the S & W Standard Undercut with many new features added for greater safety, accuracy and flexibility. Built in 56", 66", 85" and 96" widths.



1/2 BBL BOTTOMER

S & W Bottomers are designed for high production and minimum spoilage with many new features for lowering bag production costs. Bottomers are made in several sizes. Produce standard satchel or narrow valve bottom

(It was used as long ago as 4th century B.C., the pith being cut in strips, arranged crosswise, water soaked and pressed. The grass is a sedge, very tall, with smooth triangular stem and large compound umbel and drooping rays at the top).

"The proposed pulp mill would be at Lake Kisale in the Katanga, to be operated by Belgian interests as part of Belgium's 10 year plan for the Congo. Initial capacity would be 50,000 tons per month."

He reported hearing of pulp made on the Ivory Coast with hardwoods. Also of Americans now operating in lumber in West Africa.

Wrote M. Reumont, of ARMCO Leopoldville:

"I remember very well having met your Mr. Holzinger. We had the pleasure of touring this town, talking about projects in the Congo. Of course, my work here has nothing directly to do with the Lake Kisale project. Last December (1951) a Bell 47 Helicopter arrived in Leopoldville on the way to reconnoitre the papyrus lands for the syndicate. It is estimated that 3,250 acres of the papyrus fields would be enough to keep a 400-ton-a-day mill operating in perpetuity. There are more than 125,000 acres of papyrus land in the Kisale region alone.

"We have heard here of another group, which is said to be patronized by the READERS' DIGEST, the American publishing company, which is reported contemplating a big installation in the Mayumbe, using wood for pulp. I have no confirmation of reports that they intend to build a mill near Pointe-Noire, in French (Congo) Equatorial Africa, on the coast, in the near future, using the big forests which are there. This must also be a huge proposition, because they are speaking of lodgings required for white employes of no less than 700."

In an earlier letter from M. Reumont, he said: "The project to make paper pulp from wood in the Mayumbe region seems to me to be more advanced at this time than the papyrus project."

Rhodesia Mills

From Hans Baars, Benoni, Transvaal, comes this word about the new mills in Rhodesia:

"Premier Paper Mills Ltd., headquarters in Johannesburg, South Africa, and with a successful mill operating at Kliprivier, Transvaal, has established the new Rhodesian Pulp and Paper Industries Ltd. near Salisbury in Southern Rhodesia. That mill will make writing and printing papers as well as fibreboard for suiteases and similar uses.

"In Rhodesia, there is also the new Umtali Paper Mills Ltd., backed by Messrs. C. Davidson & Sons Ltd. of Aberdeen, Scotland (Mills at Mugiemoss, Scotland), and The British Plaster Board Ltd. of England. The technical manager, Hans Loebbecke has thorough African experience in the paper trade and when he was in Johannesburg recently, he explained that he intends to make some raw materials as well, probably mechanical woodpulp. Full reports of the possibilities have already been studied."

Continued Mr. Baars:

"Let us make a jump into the Indian Ocean, but land safely in the Isle of Mauritius, still a British colony. This little island has a comparatively large number of sugar mills and a consequently great interest in the utilization of sugar cane bagasse, a topic of discussion throughout the world since the end of the last war. There is no local market. It will require careful planning to solve the problems of this little island, which can be linked with those of Reunion, French Island also in the Indian Ocean."

NORTH AFRICA

New Pulps Are Being Tested

Populations—Egypt, 20,439,000; French Morocco, 8,617,000; Algeria, 8,330,000; Spanish Morocco, 1,082,000; Tunisia, 3,231,000; French West Africa, 15,831,000; Libya, 1,072,000, Annual per capita consumption of paper—Algeria, 11 lbs.; Egypt, 8 lbs.; Tunisia and French Morocco, 6 lbs.; Spanish Morocco, 4 lbs.; French West Africa, less than 1 lb.

North Africa is important in papermaking because of the esparto grass which grows in Algeria, Tunis and Morocco, of which 300,000 tons a year are shipped to Britain and used in some 40 mills there for quality papers. Some is also shipped to France, even to the U.S. and India, and some is grown and used in Spain. Esparto papers were first made in Britain, favored by makers of printing and stationery grades and now by coaters.

The esparto users in Britain are now campaigning against invasion of lower quality straw and contend esparto grades are needed for foreign trade and for profitable export product so important to British economy. We read of another kind of controversy in France—some paper technicians deplore the fact French mills let so much esparto go to Britain from French territories in Africa, arguing the French themselves ought to be making fine papers from it.

At present only 40,000 tons of paper are made annually in North Africa, half in Egypt. But there are new papermaking materials being talked of, and tested in North Africa. The papyrus grass, discussed in the preceding Middle Africa section, is plentiful in Egypt and the Sudan, too. Sandy Hill in the U.S. has been working with Egyptian cotton stalks, hoping to start an Egyptian paper industry with that material. And an Egyptian board mill is experimenting with U.S. groundwood for a white board.

In French tropical areas, especially on the West Coast, the tropical woods are being tested. A mill is reported being built in the Ivory Coast, another planned at Dakar. Successful mixing of hard and soft woods has encouraged this. In French areas, it is said softwoods grow mature in 8 or 10 years; that 80 tons of wood an acre can be harvested. Virtually all this wood is unused now.

Bagasse and waste paper are raw material for four successful French mills, in Tunis, Algiers, Casablanca and Dakar, all owned by Societe des Cartonneries de la Rochette, which also has several mills in France and reportedly contemplates one in Mexico. William Brydges, widely known Southern U.S. retired mill operator and manager, is a consultant to Rochette.

From the Canary Islands comes reports of a little wrapping and cement sack mill, with banana stalk, palm and papaya wood for raw material, machinery from Spain.



AUSTRALIA

More Machines Need More Pulp

Population-8,186,000. Annual per capita consumption of paper-64 lbs.

Outstanding development in Australia is establishment of the modern paper mill at Burnie, Tasmania, for Thomas Owen & Co. (Australia) Ltd., at a cost of approximately \$7,000,000.

This mill, designed by Hitchins, Jervis & Partners, of London and Melbourne, will be the first in the commonwealth to manufacture such papers as parchment and glassine, all hitherto imported. The new company is affiliated with Associated Pulp & Paper Manufacturers Ltd., whose main mill is also at Burnie. The new plant will be in production towards the end of 1952. It is proposed to supply the mill with slushed pulp from the A.P.P.M. mill-a eucalypt pulp, wood for which is obtained from company forests at Woolnorth, in Northwest Tasmania. Two paper machines, and a third for converting body paper into parchment, are being installed. The paper machines will make body paper for parchmentizing and also paper to be converted into glassine through 18-bowl high-speed special glassine calenders. The parchment machine

started up in May.

This new mill is designed for an annual output of about 4,000 tons of parchment and 10,000 tons of other papers. New acid for makeup will be delivered by the Emu Bay Railway and raised by compressed air to two steel tanks, with storage capacity totaling 14,000 gallons of 85% strength acid, and lead lined.

Main water supply for electrical energy, provided by the Hydro Electric Commission of Tasmania, is from the great lakes on the central Tasmanian plateau, which have been at a low level in recent years because of drought. For that reason diesel auxiliaries will be installed. Fresh mill water is from the Emu River.

Designers of the Burnie mill are also busy in Melbourne preparing plans for a paper mill at Geelong, to be built by Associated Pulp & Paper Manufacturers Ltd. at a cost of \$5,000,000. This will be a two-machine mill for fine papers.

Another project is the modern fourmachine coating factory for another company in the A.P.P.M. group, Ballarat



FOR CLEANING ANY STOCK

From Finest Rag to Waste Furnish

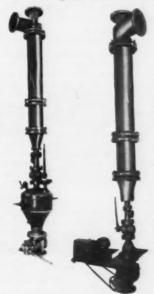
FOR PULP MILLS Standard Vortrap System

For a smaller system where fine dirt and removal of abrasive materials are the main objectives—manual care is required for this system.

Primary-Secondary Vortrap System

For larger systems where removal of abrasive dirt, bark specks, shives and similar materials are the main objectives. This system is entirely automatic and requires no manual dumping.

Patented bleed principles particularly effective for removal of light foreign material.



6" VORTRAP WITH WASTE W RECEIVER

8" AND 10" VORTRAPS WITH AUTOMATIC REJECTS VALVE

FOR WASTE PAPERS

The 6", 8" and 10" Vortraps are very effective in removing abrasive dirt, glass, rubber, sand and similar foreign materials.

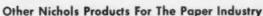
The new 6" Vortrap is specifically designed for use on board mill liner stocks.

Operation can be standard by use of waste receiver which requires manual dumping or completely automatic through use of our newly developed automatic discharge valve.

These units are of particular value to Board and Pulp Mills and DE-INKING SYSTEMS.

GENERAL:

- 1. Screen Tailings . . . Effectively cleaned by Vortraps.
- Pulp Mill Installations . . . Large volumes of stock may be cleaned effectively by a combination system of the larger and smaller Vortraps.
- Chemical Solutions in small volumes may be cleaned with the 1 ½" and 3" Vortraps.
- The elimination of solids and foreign matter from slurries and water is another of the many uses of the Vortrap in its different sizes.



Monohearth bark burning furnace for the disposal of wet bark. Ore roaster for the production of SO₂ gas and other furnace applications. The Reener—High capacity, low power consumption vibratory type screen.



1½" VORTRAI

Nichols Engineering & Research Corp.

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1477 Sherbrooke St. W., Montreal 25, Canada • 40 S. Los Robles Ave., Pasadena 1, Calif.

VORTRAF



Paper Mills Ltd., at Ballarat, Victoria, which is designed to manufacture high grade coated papers and has been in production for several months.

Australian research is directed toward self-sufficiency in dissolving pulps and

While expansion has been fairly steady in recent years, difficulty in getting delivery of materials has been a problem. Shortage of sulfur, for instance, is extremely serious and the allocation of U.S. sulfur this year was for only one third Australia's customary requirements. Local sources will provide an additional 75,000 tons, but the country will still be short more than 50,000 tons. Supply of paper from overseas has improved, but supply of newsprint and bleached sulfite paper were in short supply.

Assuming no major interruption in production, Australian paper manufacturers expected the record output of last year will be exceeded during the current year. Sales have kept pace with production and demand has been well maintained, according to Sir Norman Brookes, chairman of the group. First major production unit at Fairfield was to be in operation in July 1952, and Maryvale capacity is being enlarged.

Australian Grass for Pulp

Of academic interest so far is the suggestion of Arthur Neville, Western Australia, that Australian buffalo grass and New Guinea kunai grass be used for the manufacture of newsprint and fine paper. Samples are being tested.

Newsprint production has been averaging about 80,000 tons a year, Australian Newsprint Mills at Boyer being dominant factor. Output is still less than 40% of requirements, but is controlled by availability of suitable pulpwood species. Mountain ash (E. regnans) is the species presently used.

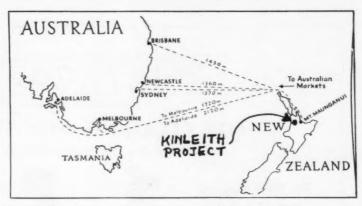
Major overall producer of paper is Australian Paper Manufacturers Ltd. with a combined production of pulp, paperboard, wrapping, printing and specialty papers of about 135,000 tons. Expansion will bring this to 227,000 tons by 1953

Tasmanian Board Mills will have its new board mill ready this year at Launceston. Most machinery was supplied by Bertram's Ltd., Edinburgh, Scotland, although chippers, screens, rotary digesters and Bauer refiners were from U.S. and Canada. A rag paper mill has been built at Albury by Murray Valley Mills Ltd.

Before the war, Australian production of fine and printing papers was only about 13,000 tons, but it will be more than 80,000 this year. Even then the demand will not be satisfied.

Principal operators are:

Associated Pulp & Paper Mills Ltd., Melbourne head office with mill at Bur-



nie, Tasmania; Australian Newsprint Mills, Melbourne and mill at Boyer, Tasmania; Australian Paper Manufacturers, Melbourne with mills at Botany, Melbourne, Fairfield, Maryvale, Broadford; Cellulose Australia Ltd., Adelaide with mill at Millicent; Colonial Sugar Refining Co. Ltd., Sydney with mill at Sydney; Masonite Corp., Sydney, with mill at Raymond Terrace; Tasmanian Board Mills, Launceston and mill at Killafaddy; Bernard Lawrence Pty., Alexandria; Cardboards Pty., Brisbane; Ernest Nelson Pty., Footscray; Western Paper Mills, Bayswater.

Australian Paper Manufacturers, Ltd., operates five mills, with a sixth under construction and employs about 67% of all those engaged in the industry. Production in 1950-51 of boards, wrappings and other papers was 148,200 tons, 11% more than in the previous year, from six board machines and seven paper machines.

Associated Pulp & Paper Mills, Ltd., employs about 15%. It has a soda pulp plant and four paper machines. When expansion is completed in 1954 the company hopes to produce about 33,000 tons of writing annually.

Australian Newsprint Mills, Ltd., employs about 12%. It comprises a ground-wood pulp (eucalypt) mill and two newsprint machines with annual capacities of 30,000 and 45,000 tons respectively. Startup of the second machine was delayed several months after installation in mid-1951 owing to power restrictions.

Cellulose Australia Ltd., with a groundwood mill using plantation pine and a board machine, produces about 9000 tons of board annually and plans substantial increase of both pulp and boards this year.

First substantial move to manufacture in Queensland has been made by Australian Paper Manufacturers Ltd. erecting a board mill near Brisbane, so local wastepaper, straw, some groundwood, and possibly bagasse can be used.

The same company, whose main operations are in New South Wales and Victoria, intends to modify one of its machines to make crepe tissue.

A new company, Murray Valley Mill Ltd., proposes a writing and specialties mill, with two machines, at Albury in New South Wales. Production of 10,000 tons a year is planned. Extensions now being made to pulpmaking capacity in Australia will, paradoxically enough, increase the need for imported pulps of required types, for proportioning. By 1955, the industry's capacity to absorb imported pulp may be up to and beyond 65,000 tons a year. Of paper and paperboard, imports comprise about half of Australian supplies.

In a new survey for the Australian government it is stated: "Mills mostly dependent on imported woodpulp could be more readily established in Australia than mills making their own pulp, but the hazard of irregular pulp supplies, the mounting cost of imported pulps, and the need for large stockpiling of pulps are now difficulties to be carefully considered in Australia."

AUSTRALIA-PAPER (in Tons)

		Produc		Total All
	N	ewsprint	Board	Paper & Board
1946-47		31,734	76,563	185,870
1947-48		31,335	83,213	192,320
1948-49		30,260	85,307	193,460
1949-50		30,472	99,519	
1950-51			n.o.	220,000
n.onot	obtair	ned		

AUSTRALIA-WOODPULP

rod.	Imports	Dead	T
		A FIREL.	Imports
33	44	38	3
38	37	38	1
73	61	40	4
Pulp	Producers	Assn.	& Can.
֡	38 73	38 37 73 61	38 37 38

	Paperb	oard	Wrappin	g Paper
	Imports	Prod.	Imports	Prod.
1942-43	 770	70,246	1,000	40,000
1948-49	 23,602	85,307	18,000	16,543
1949-50	 17,403	99,519	n.o.	30,806

Grass for Paper

Australian buffalo grass and New Guinea kunai grass may be made into newsprint and high quality paper, according to Arthur Neville, Western Australian farmer, who is submitting samples to the Commonwealth Scientific and Industrial Research Organization for testing. Neville claims that buffalo grass, which grows to an average height of 8 feet over a vast area, contains plenty of cellulose, but that it must be boiled in caustic soda at 500 degrees F for more than four hours.

One of these combinations will do your sheeting job faster, better, at lower cost.

You don't have to "make do" with a sheeter designed to fill everyone's needs and which, as a result, does no one job well.

You can select from the Clark-Aiken Complete Line a cutter exactly suited to your sheeting needs equipped with a layboy exactly suited to requirements and the conditions existing in your mill.

In addition, you can enjoy the advantages of such costcutting, quality-improving Clark-Aiken features as: oversize pinch roll and oversize sand-blasted draw roll for positive feed; lifetime tapes for long wear and freedom from stretch; scale slitter and jogger alignment for quick, accurate sheet alignment without use of measuring tape; patented selfsharpening, scissors-action "Spiral Shear" cylinder knife for clean, sharp cutting on any stock, and many others.

Clark-Aiken engineers will gladly help you make the proper selection. Write, or wire or phone The Clark-Aiken Company, Lee, Massachusetts.



Type H Duplex for high speed cutting of board or pulp and multiple sheeting. 76" to 220", both inclusive, with or without overlapping delivery.

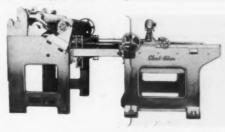


Type H Simplex, for heavy service on board or multiple sheeting. 76" to 220", both inclusive, with or without overlapping delivery.



Type C for high speed and extreme accuracy. 76" to 124 both inclusive, with or without overlapping delivery.





Overhanging Type Layboy for end or side pile removal, greater pile height, fast skid removal and replacement and fast return.





Vickery Type Layboy. A new conception of pilling. Skids rest on floor and delivery rises as pile height increases. End or side pile removal permitting use of track system for removal and skid replacement.





Fire and the elements are not the only destroyers of timber crops. Actually, insects and disease annually destroy 30% more timber than forest fires! If we are to keep our forests green, this insect menace to our future supply of wood products must be actively combatted.

In the Northwest, a strong program has already been launched against the ravages of the spruce budworm. In Washington and Oregon alone, more than 40 billion board feet of timber have been saved which otherwise would have ended up as waste.

Aerial spraying of insecticide did the job...and the Pennsalt-produced insecticide proved 99% effective. The value of the salvaged timber has been conservatively set at \$785 per acre, yet the cost of saving it averaged only a little more than \$1.00 per acre!

Similar methods will undoubtedly prove equally effective in ridding other forest lands of insects and disease... wherever private interests get their heads together in a concerted plan of action. Pennsalt technicians will be glad to offer their assistance on these problems from coast to coast.

- In the West: Pennsylvania Salt Manufacturing Co. of Washington, Tacoma, Wash. and Portland, Ore.
- In the East: Pennsylvania Salt Manufacturing Company Philadelphia 7, Pa.

Timber is a crop ... let's protect it

PRODUCERS OF

Liquid Chlorine • Caustic Soda • Bleaching Powder • Potassium Chlorate • Sodium Chlorate • Anhydrous Ammonia • Perchlorone • Sodium Arsenite • Sodium Hypochlorite • Auritatic Acid • Sulphyric Acid • Anhydrous Hydrofluoric Acid • Acid-Proof Cement • DDT • Penco Forest Spray.



NEW ZEALAND

Will Be A Newsprint Producer

Population-1,948,000. Annual per capita consumption of paper-124 lbs.

New Zealand's aspirations to become a newsprint producer will be fulfilled during the coming year, although the government's hopes to establish a newsprint industry based on the Kaingaroa state forest received a temporary setback recently when the Bowater's organization of the United Kingdom failed to reach agreement on terms, but negotiations are continuing.

A. R. Entrican, director of forestry for the New Zealand government, advised PULF & PAPER of the definite plans made by Tasman Pulp & Paper Co. whereby a newsprint mill would soon be established. Tasman Pulp & Paper Co. represents a partnership of several companies, including Fletcher Holding, Ltd., New Zealand; Merritt-Chapman and Scott Corp., New York, and Raymond Concrete Pile Co. of Delaware.

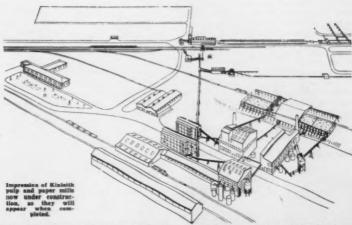
Failure to reach agreement with Bowater's was attributed to several factors, including insistence of the New Zealand government that it have full control over output of the proposed mill and the desire of the Bowater organization to exercise authority; also, estimated cost, Bowater's figuring it would be higher than the amount quoted by the government. The mill would produce 175 tons of newsprint daily and 159 tons of bleached sulfite pulp.

Meanwhile N.Z. Forest Products, Ltd., headed by the dynamic David Henry, has been seeking for two years to obtain a license to proceed with a newsprint mill to operate in conjunction with its other extensive wood utilization interests. This plant would produce about 60,000 tons a year initially, and as the New Zealand market itself does not absorb more than 40,000 tons annually, the country would then export a substantial surplus, which would be further augmented should a mill be built to use pulpwood from the state's Kaingaroa forest.

N.Z. Forest Products Ltd. has been making progress in construction of the kraft pulp and paper mills at Kinleith, near the heart of a 100,000-acre pine forest in the North Island of New Zealand. Total cost will be about \$15,000,000. The pulp mill, to produce a maximum of 45,000 tons of pulp per year, will be ready for operation by the end of 1953. Of this output, 15,000 tons will be exported to Australian Newsprint Mills of Boyer, Tasmania. Some months later, the paper mill will be producing paper for the company's multiwall bag factory, and for a solid and corrugated container factory at Auckland, N.Z. Ultimately the paper mill will reach an annual output of 25,000 tons.

The company's multiwall bag factory is now supplying bags to cement, lime and fertilizer industries. Over 12,000,000 bags were produced last year and 1952 production is being stepped up to 18,000,000 bags. N.Z. Forest Products produces more sawn timber than any other organization in Australasia. Its sawmills increased to 60,-

KINLEITH PROJECT



400

THIS MAP SHOWS LOCATION OF GREAT KIN-LEITH PROJECT based on one of world's great man-made forests. Newsprint would be exported to Australian markets. Because a Montercy pine from the state of California was found to grow even much faster here than it did in the U.S., a great integrated forest group of industries is being developed in the North Island of New Zealand. The pine here graws even twice as fast as Southern U.S. pine, it is reported Newpriat mill would be only 90 miles by rail from part at Mount Mounganul.

New Zealand-Woodpulp

Consumed paper and board mills
tons
12,867
29,772
32,901
31,462

NEW ZEALAND-PAPER & BOARD

	Wrapping Paper tons	Cardboard tons	Fibre Board sq. ft. (thousand
1940	6.253	6.620	
1945	6,335	14.284	21.958
1947	7.619	13,329	30,416
1949	8,596	14.175	39.624
1950	7.111	14.676	43,283
1951	7,541	17,320	47,766

000,000 board feet a year. The veneer plant supplies 3,000,000 sq. ft. annually. The company last year produced 50,000,-000 sq. ft. of wallboard.

To insure fresh water to Kinleith, the company installed a 5-mile pipeline from a river at a cost of over \$350,000, to accommodate some 1,500 workers at Kinleith, the company is building a model housing project to cost about \$2,500,000. The government railway has built a branch linking Kinleith and Tokoroa with the main North Island system. Hydroelectric power is supplied by the new Maraeti dam project.

Equipment has been arriving for Kinleith during the past year. Largest units were 13,750 gal. digesters made by the German firm of Maschinenfabrik Augsberg-Nurnberg A. G., and additional equipment is from Scandinavia. A barking drum, said to be the largest outside Scandinavia, was installed last year, supplied by Wartsila-Konvernen, of Finland.

If the Kaingaroa state forest newsprint project goes ahead, the government will provide at least a part of the capital and will spend an additional \$30,000,000 on harbor and other facilities. The part would be only 90 miles from the plant, by rail. Approximately 700 dwellings would be required, and the government would build

Under the offer by the government, private enterprise would purchase, for 75 years, 23 million cu. ft. of exotic softwoods from the state forest. Proposed production would be 70 million feet of lumber, 50,000 long tons of newsprint, 10,000 long tons of printing and writing paper and 25,000 long tons of sulfate pulp. Promoters maintain Australia alone could absorb the exportable surplus.

One of Largest Forests in World

The Kaingaroa state forest is the largest man-made forest in the South Pacific, and one of the largest concentrations of annual wood growth in the world, according to the government. The average haul of wood to the proposed plant is 20 miles and the raw material can be supplied in perpetuity. There is no intention of selling any part of the growing forest, and cut will be limited to growth. Main species in the Murapara working circle directly tributary to the proposed mill are Pinus Radiata*, Douglas fir, Corsican pine, Ponderosa pine and Lodgepole pine. Sample shipments were tested satisfactorily at Lufkin, Texas, U.S.A., by Southland Paper Mills.

New Zealand's annual production of paper now averages about 40,000 short tons, and about 65,000 short tons are imported. Consumption has been running slightly over 100,000 tons.

Operating New Zealand companies other than those mentioned are Whakatane Board Mills at Whakatane, manufacturers of box, carton and container board, and New Zealand Paper Mills at Mataura, manufacturers of wrapping papers, kraft paper, toilet tissue, etc.

The New Zealand department of indus-

risus Kadiata-a pine tree imported from Monterey. California, U.S.A. Grows four times as fast as it did in California.

tries and commerce gives the following figures on estimated domestic production in 1951 (long tons): wrapping and miscellaneous kraft—3,570; bag reels, toilet paper and miscellaneous—3,100; box and container—11,000.

Imports of pulp and paper products were estimated as follows: newsprint—32,000 long tons; printings and writings—9,000; box and container—9,300; chemical pulp—10,400; kraft liner board—6,600; corrugating paper—3,000; and kraft sack paper—5,000.

HAWAII

More Bagasse May Be Used





GEORGE W. ALJIAN (left), Director of Purchasing and Packaging for California and Hawailan Sugar Refining Corp., San Francisco, who heads studies of commercial possibilities for Hawailan bagasse paper production. Dr. E. C. LATHROP (right), head of U.S. Northern Regional Research Laboratory for agricultural residues at Peorla, Ill., is conducting research for the sugar secole.

Population: 499,000. Per capita consumption included in U.S. section.

A section on Hawaii in this WORLD REVIEW has a potential importance because of the possibility of an important bagasse paper industry in the future. The Hawaiian Sugar Planters' Association, supported by 28 plantations on the islands, turned to intensive research in 1951 to find cane by-products—bagasse for fiber or quality paper, and molasses.

At present the only by-product use of bagasse in Hawaii is by Pioneer Flintkote, Hilo, manufacturer of wallboard, using only a small portion from one island.

To head studies of commercial possibilities of by-products, George W. Aljian, director of purchasing and packaging for California and Hawaiian Sugar Refining Corp., San Francisco, was placed on loan to the HSPA. C&H is the refining and marketing organization which handles the entire Hawaiian sugar output.

Mr. Aljian acts under guidance of Dr. L. D. Baver, Director of the HSPA Experiment Station, who initiated the project.

Economics of the separation process of fiber and pith is the major problem. The Hawaiian industry is conducting investigations at both the Northern Regional Research Laboratory at Peoria, Ill., and at a pilot plant at Oahu Sugar Co. in the islands.

Under contractual arrangements with the regional laboratory, Dr. E. C. Lathrop, who has had long association with agricultural residue utilization, is directing small scale pilot plant tests.

A larger scale pilot plant is in operation at Waipahu, near Honolulu, using various separation techniques. "Round-the-clock" operation is underway at this plant to produce the separated pith in volume to provide livestock feed for research. A paper and pulp technologist, Wm. A. Robinson, is working on the fiber aspect. Paper technologists have been brought into the Hawaiian sugar industry investigations both at Peoria and in Honolulu. Dr. Joseph E. Atchison was employed as consultant on this phase of the study in July and August 1951. Dr. Ruth Shallcross, Institute of Paper Chemistry, Appleton, Wis., nationally known paper economist, has been assisting the program.

New U.S. Rayon Company

Courtaulds, Ltd., was incorporated in Delaware recently with authorized capital stock of \$3,000,000, a wholly-owned subsidiary of Courtaulds, Ltd., of England.

The chairman of Courtaulds, Ltd., Sir John Hanbury-Williams, said the new American subsidiary would first concencentrate on the production of about 50,-000,000 pounds of viscose rayon staple in the U.S., this project to be completed in 1953.

An NPA certificate of necessity was issued to the company for a \$10,000,000 plant at Huntsville, Ala. The possibility of expanding activities to include manufacture of other products was noted.

It will be recalled that Courtaulds, Ltd., founded the American Viscose Corp., controlled it from 1920-1941.

Paper and Paperboard

A revised and expanded edition of the 1944 monograph on Paper and Paperboard provides expert and critical discussion of the significance of the more commonly used tests, and defines terms, nomenclature, and properties of paper related to these tests. It is of service to those who may contact the field of paper infrequently or who may be familiar with a limited portion of it; and many portions of this publication will be of interest to the technologists and other experts working directly in the paper industry.

Copies of this 140-page publication— Paper and Paperboard—STP No. 60-A, in heavy paper cover, can be procured from American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa., at \$2.50 each.

See Page 3 for conversion factors to help you in using this WORLD RE-VIEW: How to transpose Metric Tons to Short Tons and vice versa; Cords to Meters, etc.



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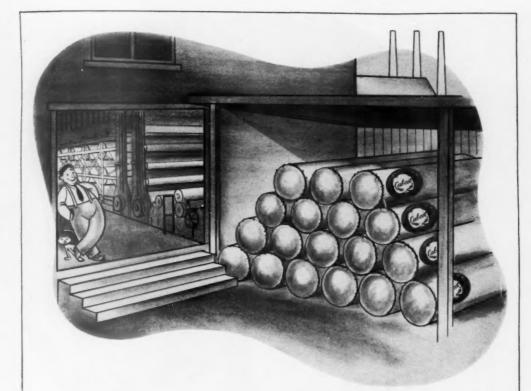


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1952

Non-Paper Cellulose RAYON, ACETATE, CELLOPHANE, PLASTICS, ETC.

By Rex Vincent

Technical Director, Bulkley, Dunton Pulp Co., Inc.

(Written Especially for PULP & PAPER'S 1952 Review Number)

Mass production and all its techniques are the American forte. But with all its advantages of low costs, uniformity of product, and the service of mass markets, it has a number of disadvantages; among which is the inability to do things in a small way. Mills must be big—and in an era of rising costs of construction the economic size of mills has gone up until a modest pulp mill is no more; they begin at the daily capacity of 200 or 300 tons.

The producers of dissolving (purified) pulps have done it in a big way and as is customary in the pulp and paper business they may have over-expanded. The year 1951 witnessed the greatest single increase in production of these pulps in the U.S. and Canada. With the production facilities now available and those under construction it is probable that there will not be a shortage of these pulps for years to come. It is not easy to forecast this period because some genius could well have a laboratory pot boiling that would change everything. Barring such an event, there should be ample supplies for American users for at least five or six

This statement, of course, assumes that foreign producers of rayon and other cellulose derivitives will have the usual difficulties in obtaining the necessary dollars to purchase these pulps over here. If this were not so, or if it changed so that foreign purchases became easy, the supply picture could change as there is a tremendous world demand for cheap textiles which could be translated into North American dissolving pulps. This reversal, however, is not in sight, and the assumption can only be considered fair and logical.

Last year not only saw the largest production of these pulps, but it was also the birth year for the first depression in the rayon-acetate industry (Ed. note-Federal Trade Commission has ruled-viscose is rayon; acetate is acetate). There have been declines in the business, but the following period has always seen the production figures going higher than before. This time the period of decline has been more than a slight adjustment, and already it is 10 months old with no signs of real recovery in view. It may be several years before the industry can recover the ground it has lost, let alone soar to new heights. Until it does, the production of dissolving pulps will suffer because the rayon-acetate industry uses over 60 per cent of the production. There is statistical indication that the industry has ample stocks of pulp, since the production of REX VINCENT, author of this article for WORLD REVIEW, stresses now strong world demand as a potential for dissolving pulp—but points out exchange difficulties, too.



pulp was much higher than consumption figures. A timing for the return of activity to the pulp mills can be worked out by reversing the timing of the fall in pulp shipments. The textile depression hit rayon in Aug. 1951, but it did not get to the pulp mills until Jan. 1952. That is a lag of about six months and if this theorizing is right, the dissolving pulp mills will suffer for lack of business the rest of this year.

The statistics of the industry will show how startling has been the growth of production in the U.S. and Canada. In Table I the figures for the U.S. show that 1950 was the biggest year to that time and 1951 was higher by 142,566 tons. This increase is almost as much as the total production in 1938. The production in 1951, 615,776 tons, is not far from the total available from North America in 1947; only four years previous. These figures deserve considerable study as there is more that can be said than mentioned above. For example notice that:

 Imports seem to be steadying down and are showing a trend of decrease.

2. Exports continue to rise.

In the six years since the end of the war the production of these pulps has doubled.

The trend of decreasing imports is important because the bulk of these come from Canada and these Canadian imports have constituted a large portion of the U.S. supply. A study of *Table II* showing the origin of these imports reveals an interesting fact. The total from Canada does not stray very far away from 225,000 tons when there is a heavy demand in the U.S.

Does this mean that this is the quantity Canada intends for the U.S. or is it all that the U.S. buyers want from Canada? It would appear that contracts with American buyers are renewed on about the same tonnage basis, and production available over and above that amount goes into the foreign market. Table II also demonstrates that imports from overseas have become an insignificant factor. In 1951, a year of heavy consumption, these imports were below what they were in 1949, a year of low consumption. North America has not only become self-

sufficient in dissolving pulps but has a large exportable surplus. This is obvious as shown in Table III which places the figures on the basis of the North American Continent. In this compilation U.S. and Canadian production are added together, exports are the total of those made from both countries and imports are those to the U.S. only from overseas.

There will be noted that there is a difference between the net available for the U.S. in *Table I* and the net available for North America in *Table III* of 54,443 tons. This quantity represents shipments made

TABLE I U.S. PURIFIED WOOD CELLULOSE (In Short Tons)

	Produc-			Net Avail-
Year	tion	Imports	Exports	able
1938	171,650	65,220	72,800	164,070
1940	288,500	113,945	115,204	287,241
1943	369,731	129,380	22,884	476,226
1944	429,545	132,675	10,729	551,491
1945	355,820	146,030	13,030	488,820
1946	295,680	198,540	9,300	484,920
1947	408,460	248,070	14,570	641,960
1948	421,924	239,842	14,665	647,101
1949	371,422	154,348	3,857	521,913
1950	473,210	238,856	27,284	684,781
1951	615,776	230,038	32,944	812,920

TABLE II U.S. PURIFIED WOODPULP IMPORTS

	1948	1949	1950	1951
Canada	224,942	149,801	229,102	225,836
Sweden	9,080	3,888	2,177	3,683
Finland	3,718		158	
Norway	2,101		1,021	475
Others			1,398	94
Total	239,841	154,348	238,856	230,088

TABLE III NORTH AMERICAN PURIFIED WOODPULP (TONS)

	Produc-			Net Avail-
Year	tion	Imports	Exports	able
1946	555,000		60,000	
1947	707,000	23,700	56,000	674,700
1948	754,000	14,900	80,400	688,500
1949	620,930	4,550	83,150	542,330
1950	796,312	9,745	83,149	722,908
1951	1,014,240	4,152	151,029	867,363

within Canada of about 36,000 tons (an increase of 20 per cent over 1950) and a balance of 18,400 tons which were either in transit, that is, reported as shipped but not reported as being received, or in inventory at the producing mill, or stored in transit. The North American production of 1,014,240 tons is the result of the expansions which were in progress when this review was being written for 1950 and where a 1951 capacity was estimated at 1,035,000 tons. It can be seen that the

TABLE IV

CELLULOSE IN THE U.S .-- ACETATE* RAYON INDUSTRY

Year	Rayon-Acetate Production (Tons)	Woodpulp Consumed (Tons)	%	Linters Pulp Consumed (Tons)	%
1930	63,850	45,000	62	27,000	38
1935	131,077	86,000	63	51,000	37
1940	235,585	178,000	75	60,000	25
1942	316,308	280,500	85	49,500	15
1944	361,977	285,000	78	82,000	22
1945	396,000	297,000	74	103,000	26
1946	427,000	323,000	75	105,000	25
1947	478,000	397,000	83	81,000	17
1948	539,500	435,000	81	104,500	19
1949	476,600	348,700	73	127,900	27
1950	590,600	456,200	77	134,400	23
1951	616,300	515,500	84	100,800	16

Source: Textile Organon, *U.S. Federal Trade Commission has ruled the rayon is viscose; acetate is acetate.

TABLE V U.S. RAYON-ACETATE PRODUCTION BY TYPES (IN SHORT TONS)

	(Tons) 1948	1949	1950	1951
Viscose and Cupra-Amonium Fil.				
(including high-tenacity)	281,150	272,150	313,500	329,050
Acetate Filament	146,900	127,500	163,500	150,050
Viscose staple and tow	92,250	64,900	94,500	103,650
Acetate staple and tow	41,850	32,350	58,500	64,350
TOTALS	562,150	496,900	630,000	647,100

difference between the actual production and the estimated capacity is only 21,000 tons, but inasmuch as some of the mills were not able to run a full capacity because expansion facilities were not finished, it is probable that the capacity at the end of 1951 was higher than the estimated figure. It is probably close to 1,050,-000 tons per year and this takes into consideration the new production from the Natchez, Miss., mill of International Paper Co. and the new mill of Columbia Cellulose Co. at Prince Rupert, B.C. This figure will not change by very much during the year 1952. There are expansions under way which might become available for this year, but they will come in gradually and all of them will not be complete until very late in the year. Rayonier has work under way which will increase their capacity by about 75,000 tons and Columbia Cellulose is doing work which will increase that capacity by about 30,-000 tons per year. If these are pushed through it would mean that the capacity by the end of 1952 could be estimated at 1,155,000 tons per year.

There are, however, further additions to this capacity which must be considered because even though they might not be actually working in 1952 they represent a potential that will have an effect on the market and they should be operative early in 1953 and 1954. The increase in the Natchez mill of International, amounting to 100,000 tons per year, may be finished this year, but certainly it can be considered for the first quarter of 1953. The Ward Cove. Alaska, mill of Ketchikan Pulp Co. (Puget Sound and American Viscose) is under construction and will have a capacity of 100,000 tons and Olin Industries is planning a mill in the South of 60,000 tons per year. Rayonier is also planning a Southern mill and Buckeye Oil is working on one. These new mills,

when they are built, will add about 300,-000 tons to the capacity figure and thus that figure will show increases year by year until they are all in production. No other mills are now being discussed so by the end of 1953 the capacity figure could be 1,25,000 tons-taking in the Natchez mill, and by the end of 1954 it could be 1,315,000 tons, by adding in the Olin mill. As the others come in the figure would rise to over 1,500,000 tons. This would be the capacity by 1955 if all these facilities are built and it is almost double the production of 1950. Perhaps this rate of expansion is too fast. Can the rate of consumption go up that fast? It did not go that fast from 1946 to 1950.

But take another look at Table III, for we are talking about North America, and notice the increase in exports from North America. These amounted to 151,000 tons; very nearly double the year before. The U.S. only exported 33,000 tons so the difference came from Canada. If these exports from Canada can be maintained, the industry has not expanded too fast, but that is a tender hook to hang on.

RAYON AND ACFTATE

The total consumption of woodpulp by the United States rayon and acetate industry reached an all-time high in 1951 with 515,500 tons used out of its total pulp consumption of 616,300 tons. Always the largest user of the industry's production of non-paper woodpulp, the rayon-acetate industry exceeded by 59,300 tons its largest consumption of any previous

As a matter of fact, of cellulose pulp consumed by the rayon industry in 1951, 84 per cent was woodpulp-the highest percentage use chalked up since 1942. The figures, as shown here, (Table IV) have woodpulp used 5 to 1 over cotton linters pulp by the rayon-acetate industry, with 515,500 tons being consumed as compared with linters' 100,800.

What has happened and is happening has already been indicated in this article, but the trend towards greater and greater use of woodpulp by the rayon-acetate in-dustry in the U.S. became thoroughly established during 1951 with the two largest factors in the field-American Viscose Corp. and Celanese Corp. of Americamaking it plain that through construction of their own pulp plants in virgin timber areas they were going to insure themselves of a continuing supply of raw material at a relatively stable price.

Tables IV and V present statistics on rayon and acetate.

Reaches New High

Reaches New High

The total rayon-acetate production for the U.S. during 1951 again reached a new high—a total of 647,100 tons being produced as against the previous high of 630,000 tons recorded in 1950. All types showed a gain except acetate filmament yarn which dropped from 163,500 tons in 1950 to 150,050 tons in 1951.

This, however, tells only part of the 1951 story. With consumer demand for these products down in the latter part of the year, shipments for the period were actually down about 6% from 1950, with 49,200 tons of stock accumulating in producers hands.

Late in 1950, Textle Organon made an industry survey on capacity and estimated that rayon-acetate capacity would reach 691,500 tons by July 1951, and 760,000 tons by Oct. 1952. On this basis, it can be seen construction has not proceeded as fast as forecast, and that the slackening of demand for rayon products has resulted in production considerably below capacity.

capacity.
Capacity forecasts by Rayon Organon in December 1951 indicated the following rayon-acetate production capacity for the industry for 52 weeks beyond the date listed, in tons:

							Tons
Nov.	1951						722,000
July	1952						755,000
	h 195						833,500
	1953						851,000

Although these forecasts have since been slightly revised, they still form a good basis for estimating the consumption of woodpulp by this industry. On the figures shown here and following the pattern of consumption indicated by the 1951 figures on woodpulp and cotton linters, and if capacity is utilized fully, 1952 production would require approximately 710,000 tons of pulp with 596,000 tons being woodpulp, and 1933 production could require approximately 807,000 tons of pulp with 678,000 tons being woodpulp. This would represent increases in woodpulp consumption of 80,000 tons for 1952 and a prospective 163,000 for 1953.

1953.

Table VI, below, graphically shows that in spite of the continued growth of the U.S. rayon-acetate industry it has not kept pace with the rest of the world. U. S. produced only 32.7% of the world total in 1951 as compared with 36.0% in 1950 and 56.5% in 1945.

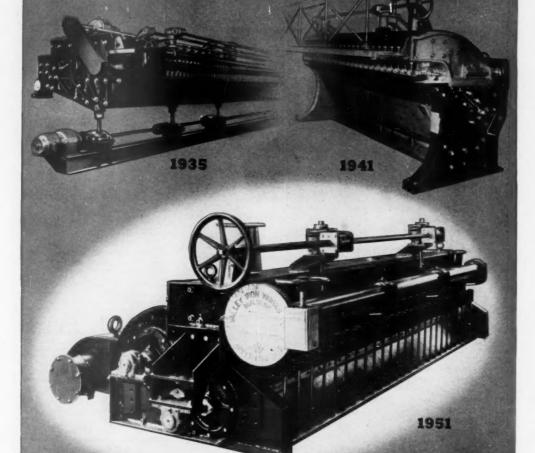
TABLE VI World Production of Rayon—Acetate

	Production Tons												V.S. % of
1940	1,235,500						*						19.1
1945	701,500												56.5
1946	843,500												50.6
1947	994,000				*	ĸ		*		*	*		49.0
1948	1,225,500								*				45.9
1949	1,352,000		5	*							*		36.7
1950	1,750,000	*				×	*			*	*		36.0
1951	1,980,000									*			32.7

Production of rayon-acetate outside the U.S. may well provide an additional market for North American woodpulp producers. Because production of rayon in some countries that

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PULP & PAPER

1952 Review Number

were able to produce substantial quantities of their woodpulp in pre-war years, will now require sizeable imports of this raw material. With the situation being what it is in the U. S. now, between supply and demand, it can be reasonably assumed that dissolving producers here are going to seek these foreign markets, if they exist.

CELLOPHANE

Production of cellophane during 1951 reached an estimated all-time high of 300,000,000 lbs. for a consumption of approximately 150,000 tons of woodpulp. New facilities added to existing plants of Sylvania Division of American Viscose Corp. and Dupont, the two traditional producers of this material, and capacity brought in by a new factor in the field. Olin Industries, at Pisgah Forest, N.C., accounted for this high figure.

Actually capacity moved up faster than consumption during the year as it is estimated the actual production cavacity for the industry is close to 340,000,000 lbs. How much of this capacity is used during 1952 depends entirely upon the supply-demand situation. If the demand begins to come in, there is good chance that the industry will once more set a top production figure.

Consumption of Woodpulp In Cellophane (Est.)

		,	4		v	3/	2.4	4.6	781	(# 100 t)		
1948		×				*				110,000	tons	
1949										115,000	tons	
1950										135,000	tons	
1951										150,000	tons	

CELLULOSE PLASTICS AND DERIVATIVES

Cellulose acetate film, sheeting and molding compounds consumed an estimated 11,700 tons of woodbulp during 1951. This production is broken down roughly as follows: Thous

Cellulose Item	Thousands of Lbs. Production	of Lbs. Woodpulp Consumed
Acetate Film	15,000	7,800
Acetate Sheeting Molding Compound	10,000 62,000	2,600 13,000
Sources: U.S. Facts fo		

ates of use. por

TABLE VII CONSUMPTION OF PURIFIED WOODPULP (In Thousands of Tons)

1040 1040 1050 1051

	1948	1949	1950	1951
Total Net for:				
North America	688	542	723	867
Consumed, Canada	18	20	30	37
Transit shipments	8	4	8	18
Net for U.S. Cons'n	663	518	685	812
Rayon & acetate	435	359	456	516
Balance	228	160	229	297
Cellophane	110	115	135	150
Plastics	28	18	45	38
Misc. viscose	4	3	4	5
Special Papers	33	1		
San. napkins, Vulc.		> 24	45	60
Fibre, Misc.	52)		

Other woodpulp tonnage went into carboxymethyl-cellulose (CMC), which is enjoying greatly increased manufacture in the production of the popular no-rinse detergents; and into nitrocellulose, ethyl-cellulose, and methyl-cellulose. The consumption here is estimated at 26,000 tons—for a total cellulose plastics and derivatives consumption of woodpulp totaling 37,700 tons.

SUMMARY

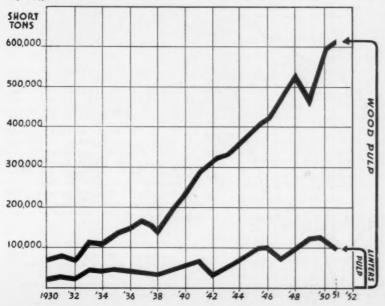
Table VII. sums up consumption of purified woodpulp as ou lined in the foregoing sections, and it must be emphasized that the statistics in this table are not uniform in their origin. Some are authentic, having been gathered and reported by various agencies. Some by necessity are the author's best estimates.

Some are authentic, having been gathered and reported by various agencies. Some by necessity, are the author's best estimates.

As can be found, through a check of the figures in Table VII, 1951 found producers and consumers holding in inventory an estimated total of 54,710 tons of purified woodpulp at year's end. This is the first time since we began developing this information for this world review issue tha' it has been necessary to report this situation.

CELLULOSE CONSUMED FOR RAYON-ACETATE

DRAWM BY PULP & PAPER'S Artist, this chart shows how Woodpulp has become the dominant raw material for Rayon and Acetate. (Viscose is rayon and acetate is acetate and should be differentiated from rayon henceforth, according to ruling of U. S. Trade Commission.) A total of 616,300 tons of woodpulp was used last year to make rayon and acetate. This was 84% of total raw material. Cotton linters—less dependable and with more fluctuating price—fell off to 100,800 tens—only 16%.



Exclusive Report On Laminates And Molds

By Arthur J. Norton Consulting Chemist, Seattle

As the table on "U. S. Laminates and Molds Production" shows, wood-filled molding compounds were down last year from 1950, but laminates using paper were at a record high of about 92 thousand tons production.

Wood-filled molding compounds slacked cff in November. For 1952, up to midyear, they were running at a rate about equal to 1949 which was about 60,000 tons annual production. Reductions in automotive, refrigeration and electrical parts, as well as in television production, slowed up these

A considerable amount of laminates are used for military purposes but very little molding powder, relatively speaking. Pulp moldings, meaning those with resins, continue upward rather slowly.

U. S. LAMINATES AND MOLDS PRODUCTION—PULP AND PAPER PLASTICS

(In Thousands of Tons)

Estimates made especially for PULP & PAPER by Arthur J. Norton, consulting chemist who has been closely identified with these developments in New England and the Middle West and now makes his headquarters in Seattle.

	Paper	Paper 1	Wood Flour Fille	d
	Laminates (paper plus	in	Molding Mate-	Pulp Mold- ings
1940	10	7	2	-1
1943	40	20	2	1
1944	40	20	3	2 2 3 3 3
1945	40	20	17	2
1946.	30	15	35	3
1947	30	15	80	3
1948	35	17	50	3
1949	35	17	60	3.5
1950	85	51	108	5
1951	92	55	94	5

U. S. Rayon and Acetate Producers Are Listed

Here is an up-to-date list of rayonacetate producers of the U. S., briefed from a compilation in *Textile Organon*. Two of these companies now have their own woodpulp mills, built or under way.

Celanese Corp. of America was the first to build its own woodpulp mill, Columbia Cellulose at Watson Is., B.C., and is planning a second at Castegar, B.C. American Viscose is partner with Puget Sound Pulp & Timber Co. in Ketchikan Pulp Co., now under construction in Alaska.

American Bemberg, Division of Beaunit

Plants at Elizabethton, Tenn., built in 1926 and 1950.

American Enka Corp.

Plants at Enka, N.C., built in 1929, and Lowland, Tenn., 1948. Formed as subsidiary of Netherlands Enka.

American Viscose Corp.

First rayon plant in America at Marcus Hook, Pa., 1911, under Courtauld patents. Others: Roanoke, Va., 1917; Lewistown, 1921; Parkersburg, W. Va., 1927 and 1935; Meadville, Pa., 1930; Nitro, W. Va., 1937 (began as cotton linter pulp plant, 1918); Fort Royal, Va., 1940 and 1941.

Beaunit Mills, Coosa Pines Div.

Childersburg, Ala., 1949.

Celanese Corp. of America.

Cumberland, Md., 1925; Rome, Ga., 2 plants, 1929; Narrows, Va., 1939 and 1940; Rock Hill, S. C., 1948 and 1951. Predecessor company was American Cellulose & Chemical Mfg. Co., formed in 1918, based on patents of Camille and Henry Dreyfus. Merged with Tubize Rayon (Rome, Ga., and Hopewell, Va., plants) in 1946, and with Lustron Corp. (Boston, Mass., plant) in 1927.

Delaware Rayon Co.

New Castle, Del., 1927.

E. I. Du Pont de Nemours & Co.

Buffalo, N. Y., 1921 and 1928; Old Hickory, Tenn., 1925; Richmond, Va., 1929; Waynesboro, Va., 1930. Started as Du Pont Fibersilk Co., 1921, under agreement with a French company.

Eastern Rayon Mills Inc.

Cleveland, O., 1923 and 1950. Started in 1909 as Cleveland Art Silk Co.

Fair Haven Mfg. Co. Fair Haven, Vt., 1941.

Hartford Rayon Corp.

Rocky Hill, Conn., 1925 and 1951. Controlling stock bought by Bigelow Sanford Carpet Co. in 1951.

Industrial Rayon Corp.

Cleveland, O., 1916; Covington, Va., 1929; and Painesville, O., 1938. This was first company to go 100% to use of woodpulp and no cotton linters.

New Bedford Rayon Co.

New Bedford, Mass., 1929 and 1942.

North American Rayon Corp.

Elizabethton, Tenn., 1928. Formed in 1927 as American Glanzstoff Corp., under agreement with Glanzstoff of Germany. Control bought by Beaunit Mills, 1948.

Skenandoa Rayon Corp.

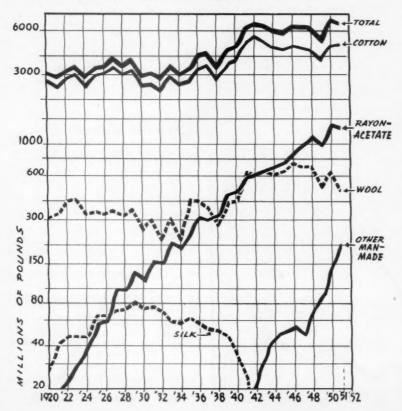
Utica, N.Y., 126. Formed under French company agreement. Control bought from St. Regis Paper Co. by Beaunit Mills in 1945

Tennessee Eastman Co., Div. of Eastman Kodak.

Kingsport, Tenn., 1931 and 1935.

U. S. FIBER CONSUMPTION

Chart by PULP & PAPER's artist based on data from Textile Organon. Note how Rayon-Acetate, largely made from woodpulp, has passed Wool in total consumption in the United States. Long ago Rayon-Acetate knocked Silk out of the running. But other man-made fibers—Nylon, Orlon, Chemstrand, etc. are climbing rapidly—a new challenge to the leaders.



U. S. PRICES OF DISSOLVING WOOD PULP Dollars Per Short Ton

		Regular Tenacity Viscose	High Tenacity Viscose	Acetate & Cupra
	1929	\$ 97.00		
	1933	70,00		
IAN.	1938	97.50		100.00
JAN.	1946	107.50	112.50	117.50
JAN.	1947	132.00	138.50	148.00
MAR.	1948	157.00	167.00	182.00
JUN.	1949	159.00	168.00	178.00
OCT.	1949	150.00	161.00	171.00
AUG.	1950	159.00	170.00	185.00
JAN.	1951	185.00	195.00	225.00
MAY	1952	185.00	195.00	225.00

U. S. PRICES OF COTTON LINTERS PULP Dollars Per Short Ton

	Annual Average	Low	High
1948	225	187.00	260.00
1949	172.00	160.00	187.00
1950	337.00	187.00	546.00

Cotton, Rayon-Acetate Dominate Textile Field

The record of textile mills' consumption of fibers shows that rayon-acetate, 77 per cent of which is made from woodpulp (the rest from cotton linters), has been second to cotton itself as a raw material since 1942. In that year rayon-acetate went ahead of wool. Rayon passed silk in 1927.

However, other man-made fibers—nylon, orlon, etc.—are moving forward strongly, though still far behind rayon-acetate and, of course, cotton.

Here was the record of U.S. consumption in 1951 compared with 1950:

	Millie	ons of s Used	Perces of T	
	1950	1951	1950	1951
Cotton	4,680.1	4,908.1	68.5	71.2
Wool	647.0	489.4	9.5	7.1
Rayon- Acetate	1,351.4	1,276.3	19.8	18.5
Other Man-Made	145.0	210.0	2.1	3.1
Silk	8.4	5.6	0.1	0.1

Man-Made Fibers. Though rayon-acetate slipped a little, 1951 was its second-best since it entered the field some 30 years ago; 1950 being the best. Other manmade fibers began entering the picture in 1940.

Cotton. The use of raw cotton is substantially above what it was in the 1920's and 1930's. However, it has fallen off from its records of over 5 thousand million pounds used annually in the years 1941-43, and may never attain that mark again.

Wool. Raw wool reached its peak in 1946-1948, when annual use exceeded 700 million pounds. The table above shows a marked slump in 1951. A rayon manufacturer has predicted the day will come when sheep are used only for food!

Silk. Silk, however, has been virtually pushed out of the running altogether. Its peak year was 1929, when 80 million pounds were used—compared to less than 6 million last year.



Out Where Huyck Felts Begin

First, the fleece. From 1,500 classified types, buyers choose only those special wools that meet the exacting requirements of Huyck Felts. In the principal wool-growing countries of the world this discriminat-ing selection goes on. For these must be just certain wools, rare and costly.

In they come, to the great wool warehouses at Rensselaer, New York. From this vast supply, skilled sorters select the grades specified for each type of felt, then blend them for the precise task the felt is to perform on the paper machine.

This is the first, and only the first step in making the famous Huyck felts which for 82 years have rendered such essential service to the pulp and paper industry.





HUYCK

F. C. Huyck & Sons - Kenwood Mills - Repsselder, N. Y.

rvice Building, Partland, Ore., 343 Sansome St., San Francisco, Calif.

1952 Review Number

PULP & PAPER

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UNITED STATES - Review Continued

(Continued from Page 54)

Authorized Expansion-It May Not Be Realized

Before this Review Number went to press, the Defense Production Authority

announced these expansion goals of the American pulp, paper and board industries for 1956, based on defense certificates for tax writeoffs authorized up to that time. However, it is questionable whether all of this tonnage authorized will actually be

U. S. WOODPULP IMPORTS FROM EUROPE

(In Short Tons)

	Sweden	Finland	Norway	Austria	Czech.	France	Ger.	Switz.	Total**
1945°	672,261	0	0	0	0	0	0	0	672.261
1946	445,114	115,220	0	0	0	0	0	0	560.334
1947	555,215	223.973	9,577	0	0	0	0	0	793,693
1948	384,576	175,900	13.218	1.696	0	0	0	0	575.390
1949	265,621	148,903	29,208	4.459	1.027	0	0	0	449.218
1950	398,814	205,651	28,958	21.005	2.597	115	977	89	668,146
1951	257,061	182,616	36,365	3,225	512	106	2.812	89	482,801
1st 3			,	-,		200	-,	00	,
Months	35,902	31,912	5,438	0	0	69	169	90	73,580

 $^{\circ}$ The 1945 figure is for only 6 mos., when shipping reopened after the war. $^{\circ}$ Includes 15 tons from Denmark in 1951; 167 tons from Italy in 1950; 4,928 tons from Russia in 1947 and 9,773 tons from Russia in 1950.

U. S. IMPORTS OF EUROPEAN WOODPULP BY GRADES

(Short Tons)

	Bleach	ned Sulfite		Su	lfate		
	Paper Grades	Non-Paper Grades	Unbl'ch'd Sulfite	Bleached Sulfate	Unbl'ch'd Sulfate	Groundwood	Total*
1946	27,541	12,417	207.059	23,484	260.434	29.399	560.33
1949	90,008	4,145	135,229	68.397	130,897	19.065	449.21
1950	115,020	8,262	163,975	86,548	257,160	34.618	668.146
1951	90,991	3,923	122,639	71.484	158,736	34.746	484.20
1952-3-mos.	14,556	118	23,919	17,968	16,070	949	73.58

Source: Department of Commerce

o Includes screenings

U.S. IMPORTS OF NORTH AMERICAN WOODPULP BY GRADES

(In Short Tons)

Includes: Canada, Newfoundland, Labrador, Mexico

	Bleached	Sulfite							
	Paper	Non-Paper	Unblichid	Sul	fate	Groun	dwood		Total
	Grades	Grades	Suphite	Bleached	Unbleached	Bieached	Unbleached	Soda	Screening.
1946 1949 1950 1951 1952	195,112 241,280 288,014 258,571 60,905	189,775 149,801 229,092 225,836 49,254	411,512 256,993 364,531 441,235 95,526	56,213 323,212 366,047 450,076 116,076	137,472 117,917 183,238 176,837 37,559	538 15,548 17,054 6,219	220,823 188,620 228,627 264,996 44,436	19,740 27,315 33,947 33,373 7,500	1,245,131 1,313,325 1,717,035 1,881,119 419,956

Source: Department of Commerce

TYPICAL PULP PRICES IN THE UNITED STATES

Before World War II—Under OPA Regulation (1944 and 1946 allowed increases are shown)—and in recent years. Specially prepared authentic table for this WORLD REVIEW.

Swedish and Norwegian prices are N.Y. Dock prices; U.S. and Canadian are "Delivered" and Maximum Freight Allowances are noted.

	Domestic Bleached Kraft	Canadian Bleached Kraft	Swedish Unbl'ched Kraft	Swedish Bleached Sulfite	Domestic Bleached Sulfite	Canadian Bleached Sulfite	Norway Bleached Sulfite	Canada Unbl'ched Sulfite	Swedish Unbl'ched Sulfite
1939	_	-	\$28	\$43	\$50	-		-00	\$36
1944	-	-	\$69	\$82	\$86	\$86	_	875	\$70
1946	-	-	\$79	\$91	\$94	\$94	-	\$82	\$79
Apr. 1949		\$136	\$112	\$132	\$126	\$130	\$125	\$118	\$122
June 1951	\$135 to \$200 (1)	\$195 (2) \$225	\$250 to \$290	\$135 to \$165	\$160 (2) to \$175 (2	\$250	_	\$225 to \$265
June					3100	10 \$175 (2	,		\$200
1952	\$142 (3) to \$167 (4)			\$175 to \$182.50	\$140(3)	\$160 to \$165	\$175 to \$180	\$150	\$155 to \$160

Maximum Freight Allowances:

(1) \$12.50 (2) \$7.50 (3) \$18.50 (4) \$15.00.

created. Pulp & Paper learned from some companies that they may not utilize their certificates. They were watching conditions in the industry as to expansion and demand.

Here are the DPA's figures, giving Jan. 1, 1951 capacities, and the approved total capacity for 1956.

(1) Paper expansion of 1,483,000 tons to increase annual capacity to 14,268,000 tons from 12.785,000 tons.

(2) Paperboard expansion of 895,000 tons to increase capacity to 13,030,000 tons from 12,135,000 tons.

(3) Woodpulp expansion of 3,313,000 tons to increase capacity to 19,048,000 tons from 15,735,000 tons.

Here is a breakdown for some important grades:

Newsprint, the previously-established goal of 1,590,000 tons a year by 1956 is unchanged. This amounts to an increase of 494,000 tons from capacity of 1,096,000 tons on Jan. 1, 1951.

Container Board, an expansion of 563,000 tons by 1956 is authorized, bringing total production up to 6,970,000 tons annually. Production capacity on Jan. 1, 1951 was 6.407.000 tons

Unbleached Kraft Woodpulp, an expansion of 1,034,000 tons is authorized to bring the capacity up to 7,212,000 tons a year by 1956. Capacity on January 1, 1951 was 6,178,000 tons.

Groundwood, Machine Coated and Book Paper, an expansion of 225,000 tons is approved, to bring capacity up to 3,658,000 tons by 1956. Capacity on Jan. 1, 1951 was 3,433,000 tons.

White Pulp (including dissolving woodpulp), an expansion of 1,440,000 tons in annual capacity approved, to bring total to 6,795,000 tons by 1956. Capacity on Jan. 1, 1951 was 5,355,000 tons.

Groundwood Pulp, expansion of 720,000 tons approved to bring total to 2,997,000 by 1956. Capacity Jan. 1, 1951 was 2,277,000

How Historic Documents Will Be Preserved

The original parchment copies of the Declaration of Independence and the Constitution of the United States are going to be preserved in the shrine of the Library of Congress, Washington, D. C., in this manner:

The documents will be sealed in airtight envelopes of glass which is bonded to a metal frame. Each document-leaf will have its own enclosure and will rest on a special pure cellulose backing paper in an inert atmosphere of 99.99% pure helium at a controlled humidity. The enclosures will be exhibited behind special filters that will shield the parchments from destructive light rays.

Maine U. Booklet

A new 16-page booklet entitled "Education for Your Career in the Pulp and Paper Industry" has been issued by the University of Main Pulp and Paper Foundation and University of Maine, to acquaint secondary school students with opportunities in pulp and paper, and programs of study available at the University.

J. L. Ober, vice president of the Scott Paper Co., Chester, Pa., who is chairman of the Foundation's executive committee, said in an introductory statement: "The members of the Pulp and Paper Foundation are greatly interested in the curriculum and facilities at the University of Maine.'

SMIDTH ROTARY KILNS

FOR REBURNING LIME SLUDGE

The illustration above shows a modern, efficient, Smidth Rotary Kiln for reburning lime sludge at the plant of the West Virginia Pulp & Paper Co., Charleston, South Carolina.

F. L. Smidth & Co. are specialists in the design and manufacture of rotary kilns and have furnished numerous installations in many countries for burning lime, lime sludge, dolomite, magnesite, cement, ores, etc.

F. L. SMIDTH & CO.

11 WEST 42nd STREET

NEW YORK, N. Y.

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CANADA

BOMBAY

REGIONAL ORIGIN OF SALES OF DOMESTIC MARKET PULP IN U. S.
All Grades Except Defibrated—Tons of 2,000 lbs.—Showing imported and domestic supply for consumers

Year	Pactfic	South	New England	Lake	Mid- Atlantic	Total U.S.	Mkt. Pulp Imports	Total Supply
1947 (Tons)	. 727,135 . 22.6%	227,770	218,451	96,705	69,732	1,339,793 41.57%	1,883,157 58.43%	3,222,950 100%
1948 (Tons)	801.842	7.0% 230.744	6.7% 188,527	3.0% 95,559	60.920	1.377.592	1.739.120	3.116.712
1948 (Percent)	25.2%	7.2%	5.84%	2.96%	1.08%	42.28%	57.72%	100%
1949 (Tons)	. 751.267	184.482	165.815	59,801	45,526	1.206.891	1,304,326	2,511,217
1949 (Percent)	. 29,9%	7.4%	6.6%	2.4%	1.8%	48.1%	51.9%	100%
1950 (Tons)	. 888,957	312,490	217,496	79,665	60,201	1,558,809	1,910,917	3,469,726
1950 (Percent)	. 25.6%	9.0%	6.3%	2.3%	1.7%	44.9%	55.1%	100%
1951 (Tons)	. 922,006	408,417	212.446	77,423	72,912	1.693,204	1.847.932	3.541.136
1951 (Percent)	. 26.0%	11.5%	6%	2.2%	2.1%	47.8%	52.2%	100%

Source: U. S. Pulp Producers Assn., Inc.

Foreign Trade For U.S. Pulp and Paper

United States foreign trade in pulp and paper during 1951 was highlighted by a 100 percent jump over 1950 in exports of wood pulp. The nearly 200,000 tons of pulp exported represented the largest annual total since the last full year of war—1944, according to the U. S. Department of Commerce. Nearly half of the 1951 shipments went to Europe with the United Kingdom and Germany each taking around 17 percent of the grand total. Latin America received 22 percent of the aggregate and Canada about 21 percent. The greatest proportionate gain was in unbleached kraft, 1951 exports of which were 7 times the 1950 total.

Imports of woodpulp in 1951 were moderately below the previous year, the net decline being due largely to a drop of 140,000 tons in receipts from Sweden. This decline was more than counterbalanced by a rise of 170,000 tons in pulp receipts from Canada plus one of 7,000 in receipts from Norway. Imports of Finnish pulp, on the other hand, were down 23,000 tons as compared with the year before. The largest gain was made in bleached kraft (18 percent) while unbleached kraft (1ately in good supply in the United States) was 24 percent lower, in a comparison of the two years.

Imports of pulpwood climbed precipitously in 1951 to a total of nearly 2.5 million cords—a gain in excess of 77 percent over the year before. This upsurge permitted an increase of nearly 1.2 million cords in country-wide mill inventories of pulpwood, in addition to supporting an 11 percent gain in the domestic output of wood pulp.

In the paper field, a 1951 increase of more than 100,000 tons of newsprint was noteworthy. Exports of 70,000 tons in 1951—59 percent higher than the year previous—reflected the acute world demand for this essential grade as well as United States participation in the efforts of the International Materials Conference to relieve newsprint emergencies.

Dobrow Sees More Paper Made in West

Morris C. Dobrow, executive secretary of the Writing Paper Manufacturers Association, may have underestimated the drop-off in paper production this year when he said he saw no reason why 1952 would not see 25 to 26 million tons of pa-

Washington State Makes Half Of U. S.-Made Market Pulp

About one-fourth of the woodpulp which goes on the market for United States paper mills and other consumers comes from just one state—Washington.

British Columbia is another leading producer, and all Canada ships in more than one-half the woodpulp, although the table on "Regional Origin of Domestic Market Pulp in U.S." does not show a breakdown for imports from outside the country.

The Pacific Coast states are listed as producing 922,000 tons in 1951, or 26% of all

1951 U. S. REGIONAL PRODUCTION OF WOODPULP—ALL GRADES

(In tons of 2,000 pounds)

New E	200	zl	a	n	d	ī													1,654,000
Middle	1	M	tl	a	n	ti	ic												1,116,000
Lake .																			1,932,000
Pacific																			2,930,000
South .																			8,863,000
Total	1	U	×	ui	te	20	f	-	SI	a	ti	es	8			0			16,495,000

Source: As reported to United States Pulp Producers Association, Inc. by 94% of the above, and estimated for 6%.

STATE OF OREGON Pulp and Paper Payroll Data

Year	Payroll	No. of Employes
1932	\$1,896,692.09	1,681
1939	\$3,089,061.69	2,044
1945	\$7,948,596,83	2,945
1947	\$11,978,117.03	3,331
1949	\$13,618,780.00	3,405
1950	\$15,448,896.39	3,566
1951	\$17,938,786.96	3,888

Source: Data from Oregon State Industrial Accident Commission plus information obtained from certain mills.

per made by U. S. mills. He was right in that there would be less production and the year still had a good bit to go as this was published before it will be known how close he was.

However, following a Pacific Coast trip, he did make the prediction of an increasingly important role for the Pacific Northwest in papermaking as its present wood pulp production continued strong. He based his statement on an extended Coast trip last year and from current situations.

"I cannot, of course, speak for individual companies," he said, "but the general signs of increased integration of pulp and paper in the Northwest are clearly visible the market pulp. Actually, Washington State produces virtually all of this—from Weyerhaeuser, Scott-Soundview, Puget Sound Pulp. St. Regis and Rayonier mills.

Sound Pulp, St. Regis and Rayonier mills. Since less than 48% of the U. S. market pulp was made in the United States, Washington State apparently made more than half of the domestically-produced market pulp. Referring to other tables elsewhere, we see that Sweden produced only about one-fourth as much as Washington State, Finland and Norway together only about one-fifth—and those were the two biggest overseas producers of pulp for the U. S. market.

U. S. PACIFIC COAST STATES PULP PRODUCTION

Tons of 2,000 lbs. (except defibrated, exploded,

	tarita airrita	ar purpay	
1923	. 299,596	1939	1,384,147
1926	. 378,005	1941	1,994,150
1929		1943	1,521,531
1931	. 817,548	1945	1,591,789
1932		1947	
1933	. 773,102	1949	2,078,526
1935	. 1.011,421	1950	2,417,998
	1.523.191		2.768.848

Source: U. S. Pulp Producers Assn., Inc.

WASHINGTON STATE Payroll Data of Pulp and Paper Industry

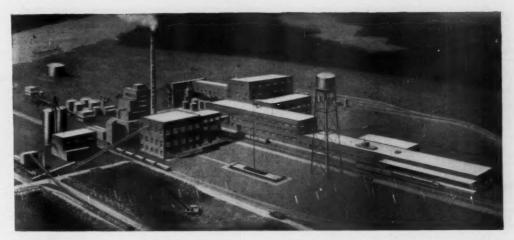
		Man-	ocrease or Dec. of Payroll Compared
Year	Payroll	Hours	Previous Yr.
1927	\$4,855,526	7,710,848	
1939	11,919,822	14,197,262	
1945	21,995,846	17,491,211	
1949	\$36,853,575	19,597,454	
1950	\$41,015,000	21,205,358	+11.29%
1051	\$45 939 131	99 149 939	+10.5%

Source: Department of Labor and Industries, State of Washington.

when current developments are viewed with the continued growth of population and paper consumption on the West Coast."

One of the signs of increased integration to which Mr. Dobrow referred might be the merger of Soundview Pulp with Scott Paper Co., and the latter company was complimented during Paper Week as an ideal of a paper company which had also integrated its manufacturing with its merchandising.

Work was to begin in 1952 on construction of the first unit of a big two-machine tissue mill Scott is building alongside its newly acquired sulfite pulp mill—Soundview—in Everett, Wash.



71 Ingersoll-Rand Pumps installed at

Riegel-Carolina's New Pulp Mill

Ranging in size from 3/4 to 400 hp, they serve throughout plant

Riegel-Carolina Corporation's new 20 million dollar bleached kraft specialty pulp mill at Acme, N. C. is being rushed to completion and is scheduled for full-scale operation early this year. The 45-acre site will produce 200 tons of bleached sulphate pulp daily from pulpwood grown on the company's holdings in the nearby Waccamaw forest. Modern in every detail, this new mill takes advantage of all the recent economies developed in the production of bleached kraft pulp.

Ingersoll-Rand pumps serve in practically every phase of the pulp producing process, handling stock of varying consistencies, black liquor, bleach chemicals and general service water. They range in size from Motorpumps of 3/4 horsepower to 400 horsepower boiler feed units. The latter are ultra-modern Class HMTA 6-stage pumps, designed with a Unit-Type rotor assembly for sustained high efficiency and easy maintenance.

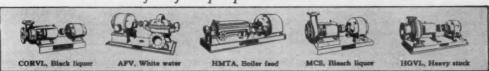
Modern pulp and paper mills can find the best solution to their varied pumping problems in Ingersoll-Rand's complete pump line. An experienced field engineer will be glad to study your problems and make his recommendations for efficient, dependable pumps to suit your particular process.

Ingersoll-Rand

PUMPS • CONDENSERS • COMPRESSORS • DIESEL ENGINES

VACUUM EQUIPMENT • AIR AND ELECTRIC TOOLS

Here are a few of the pumps installed and their services:



PAPERBOARD MILL CENSUS

TONS CONTAINERBOARDS

GRADES	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
LIKERS										
Jute	820,800	1,088,000	1,164,600	1,185,700	1,265,400	1,353,200	1,167,500	803,700	955,600	1,118,000
Kraft Cylinder Kraft Fourdrinier Total Kraft	276,700 1,174,700 1,451,400	152,200 1,252,900 1,405,100	93,200 1,340,400 1,433,600	97,100 1,308,000 1,405,100	144,500 1,311,900 1,456,400	188,000 1,596,400 1,784,400	174,900 1,906,400 2,081,300	162,900 2,014,100 2,177,000	175,100 2,560,000 2,735,100	171,600 2,760,800 2,932,400
TOTAL LINEUS	2,272,200	2,493,100	2,598,200	2,590,800	2,721,800	3,137,600	3,248,800	2,980,700	3,690,700	4,050,400
CONRUGATING MATERIALS Kraft Semi-Chemical * Strawbeard * Other *	269,300 150,800 361,400 150,600	157,600 247,500 387,500 237,100	120,400 331,100 389,000 249,400	154,600 300,800 376,800 279,300	174,300° 398,600 385,400 304,800	138,400 505,800 407,400 368,700	132,700 487,200 402,000 364,600	210,500 540,400 312,700 276,000	214,700 720,600 350,900 365,200	202,100 822,200 343,400 416,300
TOTAL COMMUGATING MATERIALS	932,100	1,029,700	1,089,900	1,111,500	1,263,100	1,420,300	1,386,500	1,339,600	1,651,400	1,784,000
CHIP & FILLER BOARDS Liner Chip Filler Board	72,200 330,800	83,800 332,700	96,800 338,200	83,000 314,500	114,200 214,600	81,600 248,900	87,300 234,100	70,600	75,700 237,800	79,800
TOTAL CHIP & FILLER BOARDS	403,000	416,500	435,000	397,500	328,800	330,500	321,400	269,800	313,500	356,300
TOTAL CONTAINERDOARDS #	3,607,300	3,939,300	4,123,100	4,099,800	4,313,700	4,888,400	4,956,700	4,590,100	5,655,600	6,190,700

Folding Boxboard Set-Up Boxboard Special Food Board All Other Paperboard	1,441,500 615,900 325,000 1,214,000	1,614,200 599,000 385,300 1,169,200	1,662,200 543,100 386,500 1,291,000	1,721,400 511,600 400,000 1,253,900	2,105,100 474,100 445,600 1,208,600	2,100,500 601,500 460,800 1,346,900	2,075,300 639,500 443,400 1,486,500	662,500 515,600	730,800	2,327,700 684,500 807,400 1,832,300
TOTAL BOXTOALDS	3,596,400	3,767,700	3,882,800	3,886,900	4,233,400	4,509,700	4,644,700	4,578,900	5,424,100	5,649,900

SUMMARY

ALL OTHER PAPERBOARD	5,220,400	5,857,600	6,117,600	6,031,200	6,524,900	2,395,900 7,002,200	6,824,100	6,176,900	7,382,800	7,766,900
TOTAL PAPETUOARD	7,203,700	7,707,000	8,005,900	7,986,700	8,547,100	9,398,100	9,601,400	9,169,000	11,079,700	11,840,600

1942-1945 Satimated Analysis
1942-1949 Opecial Food loard figures obtained from U. S. Department of Commerce. This tonnage formerly included in Folding and All Other Totals.

'SSUED: APRIL 11, 1952

Number of Machines Rises Slower Than Tonnage

In interesting APPA statistics recently issued, total number of U.S. paper and board machines in the U.S. were shown as 1,232 machines in 1899, 1,539 in 1939 and 1,708 in 1947, last year recorded in this breakdown. Capacity increase was far greater-from 2,782,000 annually to 22,873,557 annually.

Total U. S. machines on newsprint dropped from 156 in 1927 to only 32 in 1947. Capacity down from 5,346 tons daily to 2.656

Total on groundwood papers, from 19 in 1930 to 63 in 1947, but with sharp ups and downs between. Number on writing paper, up from 163 in 1925 to 243 in 1947.

Total on book paper dropped from 235 to 180, but in this category high speed big new machines brought capacity up from 5,036 tons daily to 7,686.

On tissue, machines increased from 195 in 1925 to 239 but capacity more than tripled to 3,819 tons a day. In the last year recorded, 1947, machines on wrapping were 207, a decline; on absorbent, 42, doubled in two decades; on various other papers, 1,013, about steady; and on paperboard, 564, compared with 477 in 1925, but tonnage daily was up from 14,247 to 34.954.

Tinker Estimates 2 Million in Paper Jobs

Over 2,000,000 Americans are engaged in work which is connected with pulp and paper-in making it and directly using it, according to E. W. Tinker, executive secretary of the American Paper & Pulp Association. Here is how he sizes up the employment role of the industry:

"The simple but significant outlines of 1951 in our industry are these-in that year the pulp, paper and board industry employed 254,000 workers. Allied products industries another 250,000. Printing and publishing, entirely dependent on paper production, an additional 772,000. This creates a total of 1,276,000 people which, you will note, does not yet include logging and other woods operatives.

"It is a conservative likelihood that more than 2,000,000 people of the U.S. are now engaged in pulp and paper work and directly related activities. An equally conservative estimate of their earnings is \$7,500,000,000 (7½ billion)—an astronomical figure even in this era of astronomical governmental expenditures!"

SEE PAGE 3 FOR INDEX To Articles in This Issue

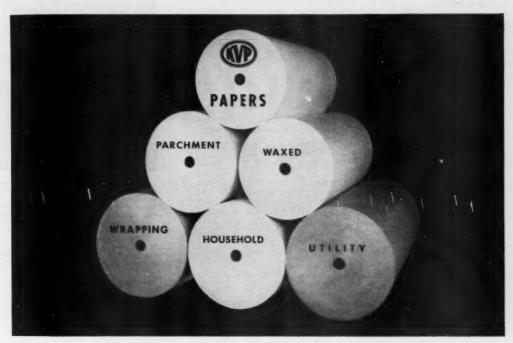
NATIONAL PAPERBOARD ASSOCIATION

Olmsted Calls For Marketing Maturity

There is room for more growth and maturity in the United States paper industry in the field of merchandising. This was the message of 1952 from its retiring chief, George Olmsted, Jr., president of S. D. Warren Paper Co. In passing on the mantle of president of the American Paper & Pulp Assn. to Sydney Ferguson, Mead Corp., chairman, Mr. Olmsted said:

"If we accept the profit approach as a desirable goal then we have a concept which calls for some new thinking. First, that we price for profit-not just for getting rid of a product, but for profit. We must get what our products are worth. Second, that we price for stability-so that over the long haul paper is a relatively steady commodity and not one which fluctuates widely and frequently. Third, that we build up a selling organization that sells for profit-not one that just sells. And fourth, that we develop merchandising thinking-not just sales thinking-wherein all proposed acts are measured against market conditions and their effect on the market.

"We must do these things, I think, if we are to maintain continuity of profits and dividends and the financial respectability which results from such continuity.'



A profitable jobbing business can be built with nothing other than the Full Line of KVP Papers for the Paper Merchant.

QUICK FACTS ABOUT KVP

AN INTEGRATED MILL

New sulphate mill (The KVP Company Limited) at Espanola, Ontario. Paper and converting mills at Parchment, Michigan, and Espanola, Ontario. World's largest manufacturer of food protection and allied papers. A dependable source of supply.

WIDE RANGE OF PAPERS

Genuine Vegetable Parchment • Waxed • Wrapping • Household • Utility • Special Treated.

PRINTING

Large staff of design artists • Letterpress • Gravure • Aniline.

BRANCH PLANTS

Devon, Pennsylvania: Printing and waxing.

Houston, Texas (The KVP Company of Texas): Printing, waxing, warehousing.

Hamilton, Ontario, and Montreal, Quebec (Appleford Paper Products Limited).

Sturgis, Michigan (Harvey Paper Products Company).

NATIONAL ADVERTISING

In leading trade papers and in select consumer publications.

SALES OFFICES

Baltimoré • Boston • Chicago • Detroit • Houston • Minneapolis • New York • Philadelphia • San Francisco • and sales engineers in every market for help, counsel, and sales force education.

"The World's Model Paper Mill"

KALAMAZOO VEGETABLE PARCHMENT COMPANY • Parchment, Michigan

1952 Review Number

PULP & PAPER

153

Woodpulp for Carpets

Carpets made from woodpulp rayon are proving highly successful. One carpet manufacturer in the past year purchased an entire rayon plant.

Woodpulp rayon represents 23 per cent

of all the surface fibers consumed by the carpet industry, according to a recent report of the Carpel Institute. The Institute said 1952 figures for rayon carpets will be considerably higher.

In 1949 it was less than 2 per cent, in 1950 only 6 per cent.

U. S. PAPERBOARD STATISTICS

Production	Imports	Exports	Consumption	Per Capita Consumption Lbs.
(In	Tons of 2,000 l	bs.)		
394,111			394,111	10.5
883,088			883,088	19.5
1,867,064	44,461	61,890	1,849,635	35.2
4,451,187	42,351	94,374	4,399,164	72.4
6,025,494	28,728	113,571	5,940,651	90.8
8,913,736	51,189	155,020	8,809,905	126.2
10,775,454	75,072	170,837	10,679,689	145.7
9,966,542	70,309	146,026	9,890,825	132.6
12,311,030	85,850	146,168	12,250,712	161.5
13,063,817	114.384	276,117	12,902,292	167.2
	(In 394,111 883,088 1,867,064 4,451,187 6,025,494 8,913,736 10,775,454 9,966,542 12,311,030	(In Tons of 2,000 l 394,111 883,088 1,867,064 44,461 4,451,187 42,351 6,025,494 28,728 8,913,736 51,189 10,775,454 75,072 9,966,542 70,309 12,311,030 85,850	(In Tons of 2,000 lbs.) 394,111 883,088 1,867,064 44,461 61,890 4,451,187 42,351 94,374 6,025,494 28,728 113,571 8,913,736 51,189 155,020 10,775,454 75,072 170,837 9,966,542 70,309 146,026 12,311,030 85,850 146,168	(In Tons of 2,000 lbs.) 394,111 394,111 883,088 883,088 1,867,064 44,461 61,890 1,849,635 4,451,187 42,351 94,374 4,399,164 6,025,494 28,728 113,571 5,940,651 8,913,736 51,189 155,020 8,809,905 10,775,454 75,072 170,837 10,679,689 9,966,542 70,309 146,026 9,890,825 12,311,030 85,850 146,168 12,250,712

UNITED STATES PAPERBOARD PRODUCTION

(In Tons of 2,000 lbs.)

	Container Board	Folding Boxboard	Setu Boxbo		Building Boards	Other Boards	Total Paperboard
1940	3,434,834	1,416,452	898,	549	179,443	449,796	6,379,074
1945	4,131,107	2,092,344	721,	087	894,830	1,074,368	8,913,736
1948	5,078,929	2,199,608	596,	190	1.270,348	1,629,603	10,775,454
1949	4,681,054	2,084,415	617.	249	838,729	1,734,757	9,966,542
1950	5,646,433	2,368,010	641,	345	1,258,620	2,292,071	1 12,311.030
1951	6,346,966	2,428,794	700,	762	1,314,850	2,272,443	13,063,817

Source: American Paper and Pulp Assn.

U. S.—ALL PAPER OTHER THAN

(In Thousands of Tons)

				Consur	nption Lbs. per
	Produced	Imp'ts	Exp'ts	Tons	Capita
1899	1,773			1,773	47
1914	3,860	349	106	4,103	84
1924	5,079	1,445	100	6,424	113
1934	5,173	2,252	114	7,311	116
1941	9,362	3,086	317	12,131	182
1947	10,705	4,060	297	14,468	201
1949	10,349	4,681	226	14,804	198
1950	12,066	4,922	225	16,763	221
1951	13,022	5,043	358	17,707	229

Source: American Paper & Pulp Assn.

U. S. COARSE PAPERS

(In Thousands of Tons)

					sumed Lbs. per
	Produced	Imp'ts	Exp'ts	Tons	Capita
1899	535			535	14
1914	911	18	7	922	18.8
1924	1,235	25	18	1,242	22
1934	1,356	5	32	1,329	21
1943	2,262	1	49	2,213	32
1947	2,903	22	51	2,874	40
1949	2,758	6	56	2,708	86
1950	3,286	11	73	3,324	43
1951	3,597	11	130	3,478	45

Source: American P. & P. Assn.

U. S. FINE PAPERS

(In Thousands of Tons)

					sumed Lbs. per
	Produced	Imp'ts	Exp'ts	Tons	Capita
1899	131			131	3
1914	269		3	266	5
1924	422	1.3	4	419	7
1934	434	.8	10	425	7
1941	950	2	46	903	14
1947	1,171	.6	68	1,103	15
1949	1,015	.6	48	967	13
1950	1,199	1	41	1,159	15
1951	1,364	2	54	1,311	17

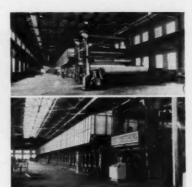
From 1899 to 1940 inclusive, only writing and cover were in fine papers. Beginning 1941, text papers (from book), bristol (from paperboard), and "thin papers" (from tissue) have been added.

Source: American P. & P. Assn.

U. S .- TISSUE PAPERS

(In Thousands of Tons)

						sumed Lbs. per
	Pi	roduced	Imp'ts	Exp'ts	Tons	Capita
1899		28			28	1
1914		115			115	2
1924		242	6	4	244	4
1934		397	8	7	398	6
1941		912	.07	25	889	13
1947		1,088	1	18	1,071	15
1949		1,195	1.4	21	1,175	16
1950		1,374	.5	18	1,356	18
1951		1,485	.2	21	1,465	19
Source:	Aı	n. P. &	P. Assi	n.		



Top—216 in. Rice Barton Machine at Potlatch Forests Inc., Lewiston, Idaho. It 39 paper dryers shown here are now being substantially added to—the mill is being greatly enlarged. This 800 foot long Paper Mill was originally built with idea of expansion—now being effected just 1½ years later. Rice Barton mechanical drive and General Electric turbine drive the machine. Below is Beloit's famed Buccaneer, at Macon Kraft Corp., Macon, Ga., also 216 in. wide, 130 ft. long, which has made 840 tons a day.

U. S. BOOK PAPER

(In Thousands of Tons)

1899 1914 1924 1, 1934 1, 1941 2, Beginning 19 papers	in inc	osanc	12 01	ionsj	
					mption Lbs. per
Pı	roducea	l Imp'ts	Exp't	s Tons	Capita
1899	304			304	8
1914	795	6	14	788	16
1924	1,050	14	10	1,053	18
1934	1,055	4	12		16
1941	2,025	28	51	2,002	30
Beginning	1941,	text p	apers	allocated	to fine
	2,207	74	76	2,206	31
1949	2.972	28	41	2,965	40
1950	3,303	38	27		44
1951	3,526	51	52		46
Source: Ar	nerican	P. & P	. Assi	a.	

U. S .-- NEWSPRINT

(In Thousands of Tons)

					mption Lbs. per	
	Produced	Imp'ts	Exp'ts	Tons	Capita	
1899	569			569	15	
1914	1.313	278	44	1,547	32	
1924	1.481	1,357	17	2,821	50	
1934	989	2,209	23	3,175	50	
1941	1.043	2,982	70	3,956	60	
1947	833	3,957	28	4,762	66	
1949	918	4,640	39	5,519	74	
1950	1.013	4,863	44	5,832	77	
1951	1,106	4,968	71	6,004	78	
C		D . D	A			

Source: American P. & P. Assn.

U. S .- ALL OTHER PAPER

(In Thousands of Tons)

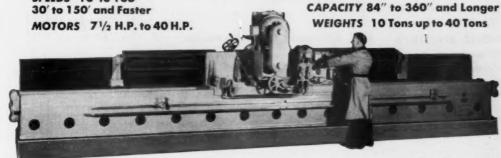
	(in inoi	JSana:	5 01 10	Just	
					umed Lbs. per
	Produced	Imp'ts	Exp'ts	Tons	Capita
1899	204			204	6
1914	455	46	37	464	9
1924	649	39	45	643	11
1934	880	15	26	868	14
1943	1,759	4	26	1,736	25
1947	2,500	5	55	2,450	34
1949	1,485	5	21	1,469	19.7
1950	1,892	7	24	1,876	24.7
1951	1,944	11	30	1,925	24.8
C	A	n . 1		TT- A	- 1049

Source: American P. & P. Assn.-Up to 1948, included groundwood. Since then, groundwood included in book.

FOR THE PULP and PAPER INDUSTRY.

CELETT AK

SPEEDS 10' to 100'



Mechanical or hydraulic head carriage drive Heavy duty Massive construction Accurate—High production Fine finishes Hanchett AK knife grinders are specially designed for grinding Chipper, Hog, Trimmer, Barker Knives, Doctor Blades, Shear Blades and Bed Plates. Grinds flat or concave bevel on any desired angle or square. Produces high speed grinding with extreme accuracy and efficiency. Head carriage travel is free and smooth without shock under all operating conditions. Available with either cylindrical or segmental type wheels.

OTHER

HANCHETT GK

Capacity—32" to 184"
Speeds—10' to 80', faster if required.
Motors—3 H.P. to 15 H.P.
Weights—1½ tons up to 10 tons

Tell us your knife problems. Our engineers may have a money-saving solution for you. Write Dept. PP-62

GK knife grinders are available with Mechanical or Hydraulic head carriage drive in either cylinder, segmental or straight wheel type. All model GK grinders, regardless of wheel type, or method of traverse, are built to one rigid standard, and constructed with extra strength in bed casting, and back base for the utmost durability under continuous, fast production schedules.

Capacity-32" to 108"

Hanchett DN knife grinders offer such outstanding features as: electrical reversing mechanism, exclusive with Hanchett; widest "V" and "flat" ways for greater bearing area; V-belt transmission drive; heavy duty base and carriage; permanently aligned revolving knife bars; lowest center of work piece to grinding wheel. Use of the DN grinder requires less jointing of knives, gives greater productivity and smoother cutting action.



Hanchett Manufacturing Company offers the most complete line of knife and shear blade grinders available today! Proved and improved through years of extensive research, these grinders give precision tolerances and finest finishes under heaviest grinding schedules.

HANCHETT MANUFACTURING COMPANY

World's Largest Manufacturer of Saw Sharpening and Knife Grinding Machinery

Main Office: BIG RAPIDS, MICHIGAN West Coast: PORTLAND 4, OREGON

DOMESTIC AND FOREIGN PULPWOOD CONSUMED IN THE UNITED STATES BY DECADES, 1860-1949

Decade	Total	Domestic	Imported	Percent of Total Imported
	1,000 cords	1,000 cords	1,000 cords	
1860-69	15	15		
1870-79	215	215		
1880-89	3,120	3,120		
1890-99	12,845	11,000	1.845	14
1900-09	30,758	24,601	6,157	20
1910-19	47,981	39,248	8,733	18
1920-29	62,277	50,780	11,497	18
1930-39	79,678	70,598	9,080	11
1940-49	175,546	156,120	19,4261	11
Total	412,435	355,697	56,738	14

¹ Includes pulp log imports in the Pacific Northwest. Source: Compiled by Forest Service, U. S. Department of Agriculture from reports of the Bureau of the Census, War Production Board, and Forest Service.

PULPWOOD STATISTICS

TOTAL FOR U. S.

Receipts-Consumption-Inventories

Yr.	Domestic	Receipts- Imports	Total	Consum.	Fr. Ena Invent.
1941	14,177	2,281	16,458	16,580	3,729
1943		1,712	15,293	15,645	-2,846
1945		1,729	16,983	16.912	2,627
1947	18,529	2,084	20,613	19,714	4,563
1949	17.547	1.706	19,252	19.916	4.877
1950	20,712	1.834	22.546	23,627	3,615
1951		2,641	27.764	26,576	5,080

APPALACHIAN AREA—PULPWOOD Receipts—Consumption—Inventories

	(In Thousands of Cords)					
Ye.	Domestic		Receipts— Imports	Total	Consum.	Vr. End Invent.
1941		1.378	34	1.412	1,420	439
1943			2	1,304	1,442	280
1945		1,365	2.3	1,388	1,444	206
1947			2.3	1.633	1.685	372
1949				1.548	1.614	335
1950				1.705	1.796	249
1951		1.959		1.959	1.860	367

Source: Bureau of the Census; except 1941-1943, by War Production Board; 1951-NPA, Pulp, Paper & Board Div.

LAKE STATES—PULPWOOD Receipts—Consumption—Inventories

(In Thousands of Cords)						
Yr.		Domestic	Receipts	Total	Consum.	Vr. End Invent.
1941		1.561	680	2,241	2,398	995
1943		1,409	560	1,969	2,325	962
1945		1,954	502	2,456	2,544	986
1947		2,154	746	2,900	2,725	1,486
1949		1,609	552	2.160	9,251	670
1950		1.985	487	2.472	2,825	986
1951			791	3,416	3,050	1,377

Source: Bureau of the Census; except 1941-1943, by War Production Board; 1951-NPA, Pulp, Paper & Board Div.

Pulp and Paper Industry High on Certificate List

Pulp and paper ranks 6th in the country on an industry basis in the granting of certificates of necessity by the Defense Production Administration, and is one of nine industries accounting for 53.3% of the total dollar volume of certificates. Certificates have been granted to this industry for investments totaling \$558,811,000 awaiting consideration.

Largest recent grants through mid-May: Scott Paper Co., \$20,845,000 for a tissue mill at Everett, Wash.; A. P. W. Products, Albany, N. Y., paper, \$1,275,339; D. M. Bare Paper Co., Roaring Spring, Pa., book and fine paper, \$5,071,956; West Va. Pulp & Paper, Luke, Md., spec. papers, \$5,580,-

U.S. PACIFIC COAST-PULPWOOD Receipts-Consumption-Inventories

I'r.	Domestic	Receipts— Imports	Total	Consum.	Yr. Ena Invent
1941	2,585	332	2.918	3.019	742
1943	2,458	103	2.561	2.271	491
1945	2.470	126	2.596	2.472	420
1947		156	3,734	3,171	974
1949		148	3.162	3.199	1,031
1950	3,244	287	3.531	3.822	772
1951		203	4.768	4.485	1.081

NORTHEAST STATES-PULPWOOD

Receipts-Consumption-Inventories

	(In Thousands Receipts		of Core	Yr. End	
Yr.	Domestic	Imports	Total	Consum.	Invent
1941	2,252	1.235	3,486	3.515	1.218
1943	1.906	1.047	2.954	3.265	820
1945		1.078	3,389	3,245	869
1947	2,970	1,140	4,110	3,740	1,440
1949	2,321	1,004	3,325	3,395	1.526
1950		1.060	3,295	3,701	1.051
1951		1,647	4,779	4,290	1,483
12					

Source: Bureau of the Census; except 1941-1943, by War Production Board; 1951—NPA, Pulp, Paper & Board Div.

U.S. SOUTH-PULPWOOD

Receipts-Consumption-Inventories

	(In Thousands of Cords)				Vr. Enc	
Fr.	Domestic	Imports	Total	Сонзит.	Invent	
1941	6.400		6.400	6,227	334	
1943	6,505		6,505	6,342	293	
1945			7,153	7,208	145	
1947	8,227		8,227	8,395	291	
1949	9,060		9,060	9,255	670	
1950	11,543		11,543	11,480	753	
1951	12.842		12.842	12.891	772	

Source: Bureau of the Census; except 1941-1943, by War Production Board; 1951-NPA, Pulp, Paper & Board Div.

000; Hartford City Paper Co., Hartford City, Ind., tracing paper, \$2,418,814, and Pacific Coast Paper Mills, Bellingham, Wash., tissue, \$659,261, Oxford Paper, Rumford, Me., \$1,200,000 for pulp and paper, and Hammermill Paper Co., Erie, Pa., \$15,439,500, for production facilities to be decided later, officials informed Paper

Decade of Progress

"Measuring a Decade of Progress" is the title of the annual report of the American Forest Products Industries. It summarizes the growth of the industry-encouraged "Keep Green" program in fire prevention and points to the nation's 25,-000,000 acres now in certified tree farms.

LATEST RESOURCES SURVEY

U. S. COMMERCIAL TIMBER In Millions of Cu. Ft. in 1945 (By U. S. Forest Service)

	All Trees	
	5 in. D.B.H.	Pulmmond
	or over	size*
New England:	0. 000.	311.0
New England: Connecticut Maine Massachusetts New Hampshir Rhode Island	967	519
Maine	15.046	6.809
Massachusetts	2,194	1,089
New Hampshir	e 3,378	1,563
Rhode Island .	120	78
Rhode Island . Vermont	2,921	1,254
Delaware	441	171
Maryland	1 859	926
New Jersey	1.210	684
New York	9,668	3.807
Pennsylvania .	9,570	4,224
Mid-Atlantic: Delaware Maryland New Jersey New York Pennsylvania West Virginia	4,611	2,316
Lake:		
Michigan	10,300	3,800
Minnesota	5,900	2,800
Michigan Minnesota Wisconsin	7,000	2,900
Cl11-		
Illinois Indiana Iowa Kentucky	1.412	451
Indiana	1,919	397
Iowa	1,904	520
Kentucky	6,826	3,822
Kentucky Missouri Ohio	6,041	4,243
Ohio	2,890	603
Plains:		
Kansas	1,391	911
Nebraska	1,078	828
North Dakota	465	355
Oklahoma (W	est)	*******
South Dakota	East) 630	450
Kansas	159	112
North Carolina	14,729	5,312 3,156
North Carolina South Carolina Virginia	9,685	3,156
Virginia	11,551	5,308
Southeast:		
Alabama	13,620	6,208
Florida Georgia	7,239	3,345 6,322
Georgia	15,237	6,322
Mississippi	12,131	4,992
Tennessee	5,993	2,332
West Gulf:		
Arkansas	15,187	6,845
Louisiana	13,933	5,263
Arkansas Louisiana Oklahoma (Ea Texas (East) .	st) 1,303	648
Texas (East) .	10,266	4,309
Pacific Coast:		
Oregon	85,213	16,917
Washington California	60,666	16,383
California	44,600	3,350
North Rocky M	ountain:	
Idaho Montana	14,024	4.055
Montana	14,137	5,896
Montana South Dakota Wyoming	West) 868	294
		2,050
South Rocky M	ountain:	
South Rocky M Arizona Colorado	2,924	468
Colorado	9,617	3,744
Nevada New Mexico Utah	100	36
New Mexico	1,705	421
Utah	1,096	275
All States	470,045	153,561

SEE PAGE 3 FOR INDEX To Articles in This Issue

HOWE SOUND PULP COMPANY LIMITED

999 West Pender Street
VANCOUVER

Plant: Port Mellon, B.C.



Unbleached
SULPHATE PULP

PULPWOOD PRODUCTION STATISTICS FOR SOUTHERN STATES (In Cords)

	Virginia	North Carolina	South Carolina	Georgia	Florida	Southeast Total
1946 1948 1950 1951	1,044,147	709,000 926,200 1,024,005 1,332,001	1,002,000 1,108,500 1,182,413 1,289,745	1,143,000 1,770,600 2,221,279 2,466,141	865,000 1,221,200 1,384,694 1,491,806	4,711,000 6,330,000 6,856,538 7,938,096
1946 1948 1950 1951		34,300 38,831	Texas 616,000 823,600 922,304 1,158,371	Arkansas 577,000 616,700 603,682 613,792	Louisiana 787,000 953,800 883,306 1,110,961	Southwest Total 1,993,000 2,428,400 2,448,123 2,927,742
		Tennessee	Mississippi	Alabama	Mid-South Total	All-South Total
1946 1948 1950 1951		181,700	1,238,000 1,433,900 1,665,863 1,781,290	756,000 981,900 1,321,204 1,193,674	2,130,000 2,597,500 3,131,025 3,096,796	8,844,000 11,358,900 12,435,686 13,962,634

Note-Because of rounding, state figures may not add up to totals.

Outhoritative estimates gathered by PULP & PAPER, All other figures from Southern and Southeast Forest Experiment Stations of U. S. Forest Service.

Pacific Coast and Rocky Mts. Wood Survey

Periodic pulpwood surveys in Washington, Oregon, North Idaho and Montana have long been features of this Review Number. They deal with the leading pulpwood producing region for its size in the entire continent, and therefore are significant.

These up-to-date figures are not available in some other regions. The tables shown here under the heading "Western Washington and Western Oregon Pulpwood Species" and "Inland Empire Pulpwood" are prepared especially for PULP & PAPER by the Forest Economics divisions of the Pacific Northwest and Northern Rocky Mountain Forest and Range Experiment Stations of the U. S. Forest Service in Portland, Ore., and Missoula, Mont., respectively.

It should be noted they do not include Douglas fir, of which there is about 65 billion cu. ft. in trees 4 inches and larger, according to Robert W. Cowlin, regional director of the Forest Service Experiment Station in Portland. Douglas fir is still a dominant lumber species but Douglas fir second growth, thinnings and left-overs are fast-increasing amounts of wood for new kraft mills and kraft expansion in the Far West

To date, the re-inventories of Western Washington and Western Oregon "pulp-wood species" shown in our tables have been completed for 35 counties: Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, King, Kitsap, Lewis, Mason, Pacific, Pierce, Skagit, Skamania, Snohomish, Thurston, Wahkiakum, and Whatcom counties, Washington; and Benton, Clackamas, Clatsop, Columbia, Coos, Curry,

INLAND EMPIRE PULPWOOD*

Washington	have been made in and North Idaho estern Montana re	were revised	last in 1940.
	Engel-	Bal-	Cotton-

Subregiont	Engel- mann Spruce	Hem- lock	Bal- sam Firs	Cotton- wood- Aspen	Tota
		Milli	on Cubi	e Feet	
N. E. Washington	65	124	139	18	340
N. Idaho	608	386	1,697	10	2,07
W. Montana	826	56	253	50	1,18
Total	1,499	566	2,079	78	4,23
Source: Norther	n Rocks	Mount	tain For	est and	Rang
Experiment Station	i, Divisi	on of	Forest E	conomics	, Mis

Soune, Atom.

* The sound volume inside bark of trees larger than
5.0 inches d.b. from stump to 4- to 6-inch top diameter
5.0 inches d.b. from stump to 4- to 6-inch top diameter
6.0 inches d.b. from stump to 4- to 6-inch top diameter
6.0 inches d.b. from stump to 4- to 6-inch top diameter
6.0 inches d.b. from stump to 6-inch top diameter
6.0 inches d.b. from the from the from the first diameter
6.0 inches d.b. from the from the first diameter from the first

Douglas, Jackson, Josephine, Lane, Lincoln, Linn, Marion Multnomah, Polk, Tillamook, Washington, and Yamhill counties Oregon. Second re-inventories have recently been completed of Coos County, Oregon and Clark, Cowlitz, Grays Harbor Pacific, and Wahkiakum counties, Washington.

Western Washington and Western Oregon Pulpwood Species, 1951

Volume in millions of cubic feet¹ of pulpwood, other than Douglas-fir in western Orggon and western Washington available for cutting² by species.³ (In addition to these species there are about 65 billion cu. ft. of of Douglasfir available in Doublas-fir subregion.)

Species	West. Oregon	West. Wash.	Total
Western hemlock Sitka spruce Balsam firs ⁴	5,073 526 4,115	14,159 960 6,190	19,232 1,486 10,305
Mountain hemlock— Engelmann spruce Black cottonwood	609	325 140	934 185
Total	10,368	21,774	32,142

I Includes all trees 4 inches and larger, diameter breast height.

² Excludes timber reserved from cutting in municipal, State, and Federal ownership.

³ Compiled by Pacific Northwest Forest and Range Experi-

ment Station from Forest Survey data adjusted for cutting depletion and growth to 1951. 4 Includes Pacific silver fir, grand fir, noble fir, Shasta red fir, white fir, and alpine fig.

Volume in millions of cubic feet of pulpwood other than Douglas-fir, in western Oregon and western Washington available for cutting by

	Western (Dregon	
County			Million Cu. ft.
			26
		**********	1,160
Clatsop			1,030
Columbia			31
			792
			390
Douglas			1.573
Hood River .			331
Jackson			830
Josephine			74
Lane			1.225
Lincoln			380
			1,145
			452
Marion			130
Multnomah			112

Tillamook			635
Washington .			37
			15
Total		********	10,368
	Western	Wash.	

County	Cu. ft.
Clallam	2,464
Clark	44
Cowlitz	1,134
Grays Harbor	2,278
Island	1
Jefferson	2.164
King	2,030
Kitsap	19
Lewis	1.879
Mason	300
Pacific	1,458
Pierce	1.043
San Juan	1
Skagit	1,56
Skamania	1,99
Snohomish	2.090
Thurston	2
Wahkiakum	386
Whatcom	88
	21,77
Total	

Million

¹Includes all trees 4 inches and larger, diameter breast height. ²Compiled by Pacific Northwest Forest and Range Experiment Station from Forest Survey data adjusted for cutting depletion and growth

to 1951.

U. S. GOVERNMENT AGENCIES-NPA-OPS

The Washington picture is always changing, as far as this industry is concerned, especially in the National Production Authority.

But here are the agencies lined up as this WORLD REVIEW went to press, in the divisions which were principally concerned with this industry. A replacement was due in the Woodpulp Section of Tissue and Sanitary Sections of NPA. As far as OPS was concerned, the Forest Products Division appeared to be pretty well stabilized as to personnel.

NATIONAL PRODUCTION AUTHORITY Chemical, Rubber & Forest Products Bureau

PULP, PAPER & PAPERBOARD DIVISION

OFFICE OF DIRECTOR

Lyall Tracy Director
T. H. Mullen Deputy Director
J. Prentice Sanger Special Asst.
for Operations
W. L. Neubrech Asst. to Director
W. H. Chisholm Advisor (Paper)

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Emilia Kirk	. Commodity	Analyst Industry Analyst

INDUSTRY ADVISORY STAFF LeRoy Hicks Commodity Industry Analyst

LABOR ADVISORY STAFF Matthew J. Burns Labor Specialist

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Lillian F. Nanna Statistical Assistant
PAPER MANUFACTURING BRANCH
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(Continued on Page 160)

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U. S. Govt. Agencies

(Continued from page 158)

FINE & PRINTING PAPER & PRODUCTS SECTION

John Dorris	
SPECIAL PAPERS	& BOARD SECTION

COARSE PAPER & PRODUCTS SECTION

Earl R. Strong Chief

TISSUE & SANITARY PAPER & PRODUCTS SECTION

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Analyst

> CERTIFICATE OF NECESSITY SECTION

Marvin J. Winship Chief

J. H. O'Connell Chief

PULPWOOD BRANCH

A. G. Natwick Chief

EXCLUSIVE FOOD PACKAGING REPORT

An annual exclusive feature of the WORLD REVIEW NUMBER is this special report and the statistics on this page showing trends in food packaging in the United States. It is important because fiber cartons and cases are extensively used. Western Canner & Packer, Miller Freeman magazine and companion publication of Pulp & Paper, prepares this report each year:

The production trend among U. S. packers of canned, dried, frozen and glassed foods continued upward in 1951 in most instances. Seasonal canned items—fruits, vegetables and juices—showed an increase of about 14% over 1950. Nonseasonal canned packs—meats, fish, poultry, milk, baby foods, etc.—gained only 2%. Glassed foods were down slightly in 1951. Seasonal dried foods—fruits, vegetables and nuts—went up some 13%. Nonseasonal dried items were off more than a fifth. Seasonal frozen fruits and vegetables reached a new high in output, led by the

still-expanding frozen citrus concentrates branch of the business. Packs of other frozen items—eggs, fish, specialties—went up moderately in 1951.

In general, the industry's consumption of paper products kept pace with these fluctuations in output. The dried food field, in some instances, increased its consumption of paper items slightly more proportionately than it did its output of products, due to continued interest in developing packages with maximum consumer appeal. Other than that, however, there were no significant developments in 1951 of importance to the pulp and paper industry.

Production in 1952, over all, may be slightly less than in 1951, with a corresponding reduction in demand for fibre cases and cartons, labels, film, etc. The pack of seasonal canned foods is certain to be lower this season, and the seasonal dried food output also may be reduced. Other items are not expected to show any major changes in outturn.

U. S. PROCESSED FOOD PACKS*

	Canned .		Glassed		ed Foods		Pounds)	
	(Million of Fruits, Juices, Vegetables	Cases) All Other Canned	Foods (Million Cases)	Fruits, (M Vegetables and Nuts	illion tons) Eggs, Milk	Fruits, Juices, Vegetables	Eggs, Fish, Specialties	
1936	173	136	79	1.227	122	92	279	
1939	191	160	85	1,529	151	213	360	
1941	264	223	114	1.675	229	319	484	
1943	284	180	188	2,390	455	496	659	
1945	321	235	233	1.672	483	749	699	
1946	370	235	235	1.762	484	985	717	
1947	311	244	240	1.879	464	729	668	
1948	300	255	207	1,909	448	1.041	677	
1949	308	245	186	1.891	568	1,171	664	
1950	327	256	288	1,492	549	1.412	716	
195100	372	261	219	1,689	430	1,500	736	

*Source: WESTERN CANNER & PACKER, Miller Freeman Publication, affiliated with PULP & PAPER.

or Preliminary

OFFICE OF PRICE STABILIZATION

POREST PRODUCTS DIVISION

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M.	C.	Walsh		Assistant	Director

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A. G. Paul Assistant Branch Chief
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Glen Converse Chief, Millwork Section
Philip Garland Chief, Western Ply-
wood and Veneer Section
Harry V. Kiley Chief, Eastern & South-
ern Softwoods Section
Albert L. Helmer Chief, Western Soft-
woods Section
Stanley Craven Chief, Wood Con-
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and Veneer Section
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Wood Products Section
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tribution Section

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Rags and Other Fibres Section
Harrison Starr Chief, Market Wood
Pulp Section

Charles Grant . Chief, Fine Paper Section Theodore Neely Chief, Coarse Paper Section

J. E. O'Brien . . Acting Chief, Paperboard Section

U. S. BUILDING BOARDS PRODUCTION

	Wall- board	Insulating	Total
Year	(Tons)	(Tons)	Tons
1941	254.477	362.033	616,510
1948	364,562	905,786	1,270,348
1949	216,530	622,199	839,000
1950	381.201	838,367	1,220,000
1951	NA	NA	1,315,000
Sour	rce: U. S. Dept.	of Commerc	e (Pulp and
Paper	Section). NA-N	ot available	

U. S. BUILDING BOARD (In Sq. Ft.)

																					Production-
Year																					Square Feet
1951																					N.A.
1950																					. 3,234,578
1949																					2,134,225
1948																					. 3,344,000,000
1943																					. 2,645,000,000
1939															,						. 1,258,000,000
Son	111	ne	e		1	D	e	n	Æ.		0	f	-	C	0	n	ai	m	e	T	ce. 1,000 sq. ft. of
%-incl	h	l	×	36	t	dal	i	is	i	e	q	u	iv	TE OF	d	e	n	t	ta	0	750 lbs. The gov- building boards— ent laminated fiber-
STEEL CAN	n	ru	ia,	u		0.51	٠.	70	-			-		•	ч		•	٠,			1

U. S. BOARD PRODUCTION

available.

board in 3/16-inch equivalent, and structural insulation in %-inch equivalent." N.A.-Not

(U. S. Department of Commerce-

m .	Paper- board*	Wet	Building Board
1946	8,396	138	956
1949	8,992	125	839
1950	10,803	144	1,259
1951	11,605	144	1.315
*Container	boards, be	ox boards,	cardboard

* Shoe board, binder board and other.

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NEWSPRINT REVIEW

WORLD - UNITED STATES - CANADA

By Vernon L. Tipka

Secretary-Treasurer, Newsprint Service Bureau (His Annual Review, revised especially for this issue of PULP & PAPER)

For six years in a row the newsprint producers of North America have each year broken their previous production records and with four months gone in 1952 their newsprint output again was running ahead of the preceding year's peak mark.

For the first four months of this year, there was a total continental increase of 102,766 tons, or 4.8% more than in the comparable period of 1951. Canadian output was 77,388 tons, or 4.3% greater; United States production was up 25,378 tons or 7%.

Estimated total consumption for the first quarter of 1951 (3 mos.) was 2.2% greater than in 1951. Shipments from Canada and the U.S. to other destinations was almost twice the volume of the first quarter in 1951.

In general, the overall supply of newsprint in the United States is considered



adequate for present needs and should continue to remain so this year. With new Pacific Coast machines starting up this year—at the new Elk Falls mill in British Columbia in mid-year and at West Tacoma, Wash, late in 1952, and speed-ups and increases in a number of other mills, some relief might be anticipated from the

unrelenting pressures of recent years for more and more newsprint.

The International Materials Conference, furthermore, has reported that the free world's newsprint supply and demand in 1952 should be in virtual balance.

The strenuous productive efforts in continental mills brought forth that new all-time record—to date—for a complete year of 6,642,000 tons of newsprint in 1951. That was 5½% greater than the previous peak of 1950. It was 1,364,000 tons or nearly 26% more than in 1946—the first year in which the prewar high had been surpassed.

Newsprint production in the U. S. in 1951 was greater than in any of the preceding 20 years. It amounted to 1,125,000 tons and exceeded output in 1950 by 110,000 tons or approximatelyy 11% and also represented a recovery of more than 400,000 tons from the low point in 1944. Despite the expansion in the U. S. in recent years an approximation of the 1926 peak output in this country does not appear to be an imminent possibility.

In 1951 the curve of newsprint production in Canada (including Newfoundland) penetrated new high ground as it also had done in each of the preceding five years. The 5,516,000 ton output—nearly five times that in the U. S.—exceeded the 1950 total by 238,000 tons or 4½% and that of 1946 by more than 1,000,000 tons.

As has been customary since 1947, the newsprint mills in the U. S. and Canada in 1951 operated not only in excess of theoretical capacity but also achieved the highest ratio of production to capacity on record

In 1951 Canada's newsprint capacity was nearly double that in 1927 while the mills in the United States regularly producing newsprint were rated at 1,050,000 tons or less than 60% of the 1927 total. Of the 1951 estimated world newsprint capacity of some 10½ million tons, Canada and the U.S. combined account for more than 60%. The unusually high ratio of U.S. production to capacity in 1951 is due primarily to the fact that the production total included considerable tonnage made by non-regular newsprint manufacturers.

Peak newsprint output in 1951 also resulted in record shipments which for all North American newsprint mills in the aggregate amounted to 6,629,000 tons or 99.8% of production and exceeded those of 1950 by 301,000 tons. Shipments from U. S. mills were slightly greater than production while movement of newsprint from producing centers in Canada was approximately 13,000 tons below output.

Of the aforementioned total, 5,891,000

U. S. NEWSPRINT SUPPLY AND SOURCES

	I	n thousands	P	ercentage	8		
	from Canada	from U.S.A.	from Europe	TOTAL	from Canada	from U.S.A.	from Europe
1915	367	1,184	1	1,552	24%	76	0
1925	1,315	1,507	133	2,955	45%	51	4
1930	2,145	1,272	134	3,551	60%	36	4
1935	2,122	911	197	3,230	66%	28	6
1940	2,741	998	34	3,773	73%	26	1
1945	2,666	707	nil	3,373	79%	21	0
1946	3,563	754	13	4,330	82%	18	0
1949	4,380	884	255	5,519	79%	16	5
1950	4,748	1,002	170	5,920	80%	17	3
1951	4,790	1,060	195	6,075	79%	18	3
1952*	4,930	1,110	180	6,220	80%	18	3
* Estimated.	on Canada is the			Prewar	is the average of	f the five ye	ars 1935-39

Estimated.

Prewar is the average of the five years 1935-39 ources: Supply from Canada is the amount of shipments reported by Canadian mills to NAC, from U.S. is the amount of shipments from U.S. mills reported to NSB less exports and from Europe is taken from reports of the U.S. Department of Commerce.

UNITED STATES: Newsprint and General Commodity Prices Compared INDEX - 1926 - 100

		Newsprint d at N.Y.	Freight Three Rivers	Newsprint at N less freight		General U.S.
	Dollars per ton	Index	area to New York	Dollars per ton	Index	Price Index
1926	\$ 70.00	100	6.80	\$ 63.20	100	100
1930	\$ 62.00	89	6.80	\$ 55.20	87	86
1935	\$ 40.00	57	6.80	\$ 33.20	53	80
1940	\$ 50.00	71	7.00	\$ 43.00	68	79
1945	\$ 60.25	86	7.00	\$ 53.25	84	106
1947	\$ 88.50	126	8.99	\$ 79.51	126	152
1950	\$101.00	144	12.60	\$ 88.40	140	162
1951	\$116.00	166	13.73	\$102.27	162	178
1952 (after increase in price)	\$126.00	180	14.49	\$112.51	178	173(a

Sources: Newsprint price is yearly average of Canadian contract prices for delivery at New York, as published in various newspapers following amouncements by companies. Freight from Three Rivers area to New York is yearly average cost of moving ton of newsprint by railway, from reports by companies concerned. General U. S. Commodity Index is issued by the U. S. Department of Labor.

(a) Effective Jan. 1, 1952, the U. S. commodity price index was changed. The new one is similar to but not exactly comparable with the former one as it includes many more commodities and uses as a base period the three-year average 1947-1949. Adjusting this backwards to base 1926 gives a current index of about 173 but an exact up-to-date comparison is not practical.

tons or 88.9% were shipped to purchasers in the U. S .- some of which eventually was exported to other markets-while nearly 360,000 tons or 5.4% went to Canada and 378,000 tons or 5.7% to overseas destinations. The U.S. in 1951 took a smaller proportion of the aggregate than in 1950 while overseas markets increased slightly in importance.

North American manufacturers' stocks amounted to 109,000 tons on Dec. 31, 1951 compared with the 97,000 ton record low a year earlier and 132,000 tons at the end

of 1949.

With, for the first time on record, a value in excess of half a billion dollars, exports of newsprint paper from Canada in 1951 again occupied the position of prime importance in the Dominion's foreign trade. According to Dominion Bureau of Statistics data the value thereof in 1951 amounted to \$536,374,000 and represented an increase of more than \$50,000,000 or 10% over 1950. The value of exports to the U.S. came to \$496,849,-000 while those to all other markets amounted to \$39,525,000. Compared with 1950 values there was an increase of \$33,-810,000 in exports to the former and one of \$16,818,000 to the latter.

In terms of physical volume, exports of newsprint from Canada in 1951 also were of record proportions and amounted to 5,112,000 tons of which 4,775,000 tons went to the U.S. and 337,000 tons went to destinations elsewhere throughout the world.

The spectacular postwar expansion in consumption of newsprint in the U.S., which from 1946 to 1950 had grown at an average annual rate of more than 400,000 tons, in effect came to a halt in 1951, at least temporarily. Actually, estimated total consumption did attain an all-time peak last year but the increase over the hitherto record high of 1950 was less than 1 per cent.

NEWSPRINT PAPER CONSUMPTION

	Population	Newsprint Tons	Paper Used Per Capita Lbs.
1951	153,396,000	5,975,000	77.9
1950	151,376,000	5,937,000	
1949	149,215,000	5,529,000	74.1
1948	146,116,000	5,141,000	70.4
1947	143,382,000	4,753,000	66.3
1946	141,229,000	4,296,000	60.8
1945	139,621,000	3,480,000	49.8
1944	138,101,000	3,250,000	47.1
1940	132,817,000	3,730,000	56.2
1935	127,521,000	3,300,000	51.7
1930	123,091,000	3,563,000	
1924	113,090,000	2,737,000	48.4

Source-Newsprint Service Bureau.

NEWSPRINT EXPORTS FROM CANADA

(SHORT TONS)								
	U.S.A.	Overseas	Total					
1952 (est.)	4.930,000	385,000	5,315,000					
1951	4.790,000	375,000	5,165,000					
1950	4,724,000	214,000	4.938.000					
1949	4.354.000	440,000	4,798,000					
1948	3,917,366	410.718	4,328,084					
1945	2.534,000	525,000	3,059,000					
1940	2,586,000	657,000	3,243,000					
1935	2.052,000	523,000	2,575,000					

Including Newfoundland since April, 1949.

"FLIGHT" OF NEWSPRINT FROM U.S.

Here is a table prepared exclusively by PULP & PAPER, which shows dramatically the flight of the newsprint industry from the U. S., as a result primarily of lack of any tariff protection in the obvious interest of low cost publishing. After the war, some plants in this country made newsprint at a loss. But when prices were raised to \$126 this year, some newspapers which deplore government interference in business in general, rush to the government for aid.

If a 1913 column were added here, we would have to list 65 companies. Only twelve are making newsprint regularly, now, although a number of additional mills usually on other grades, are currently making some. Many have gone into higher grades of paper, in less competitive fields, bringing higher returns. Coosa River Newsprint Co., Coosa Pines, Ala., partly owned by a large group of papers, is the first completely new newsprint mill built in the U.S. in the last decade. Bowater's in Tennessee will be the second. Coosa River, Southland and Great Northern are main reasons for increased tonnage over 1948. The total of 1,150,000 tons of U. S.-made newsprint for 1952 as shown in data collected by this magazine, compares closely with the Newsprint Service Bureau's 1952 estimated capacity of 1,165,000 tons—the slight discrepancy apparently due to minor variations in mill reports. Many mills in this list are owned by newspapers or newspaper groups.

COMPANIES PRODUCING NEWSPRINT IN U. S.

(Copyrighted, 1952, reproduction strictly forbidden without written permission)

	1926	1946	1948	1951	1952
		Tons	, Estimated	Capacitu	
Alexandria Paper Co	15,000				
Algonquin Paper Co	29,000	*****			
Cliff Paper Co	13,000				
Consolidated Water P. & Pa	102,000	*****	*****		******
Coosa River Newsprint Co				100,000	115,000
Crown Zellerbach Corp	174,000	200,000	190,000	205,000	210,000
Cushnoc Paper Co	20,000		*****	*****	*****
De Grasse Paper Co	56,000	*****	*****	******	******
Dells Pulp & Paper Co	12,000	*****		*****	
Escanaba Paper Co	370,000	******	*****	*****	*****
Finch, Pruyn & Co.	44,000	10,000	14.000	*****	*****
Flambeau Paper Co	14,000		14,000	0.000	******
Gary Paper Mills, Inc.	17 000		* * * * *	8,000	10,000
Gilman Paper Co	17,000	*****	*****	*****	*****
Gould Paper Co	30,000 11,000	*****	*****	*****	*****
Great Northern Paper Co.	257,000	300,000	330,000	360,000	375,000
Great Western Paper Co.	20,000			000,000	313,000
Publishers Paper (ex-Hawley)	9.000	56,000	75,000	70,000	80,000
Hennepin Paper Co	12,000			10,000	00,000
High Falls Pulp & Paper Co	8,000				
Inland Empire Paper Co	29,000		17,000	20,000	20,000
International Paper Co	323,000	*****	*****	*****	
Blandin Paper Co	22,000				
Maine Seaboard Paper Co		104,000			
Manistique Pulp & Paper Co	20,000				25,000
Michigan Paper (Plainwell)			15,000	*****	*****
Minn. & Ontario Paper Co	76,000	*****	*****		*****
Nekoosa-Edwards Paper	10,000		*****		*****
Northwest Paper Co	14,000	*****	*****	*****	*****
Oswegatchi Paper Co	16,000	*****		*****	*****
Oswego Falls Corp.	11,000		7.000	*****	
Pacific Paperboard Co			7,000 9,000	*****	*****
Peavey Paper Mills Pejepscot Paper Co.	41,000		29,000	30.000	35,000
St. Croix Paper Co.	55,000	75,000	89,000	89,000	90,000
St. George Paper Co	10,000	10,000			30,000
St. Lawrence Paper Corp	10,000		*****		30,000°
St. Regis Paper Co	115,000				
Sheffield Paper Mills			10,000		
Sherman Paper Co	16,000				
Southland Paper Mills		55,000	97,000	127,000	135,000
Tidewater Paper Mills	32,000	*****		*****	*****
Watab Paper Co	17,000	*****	*****		*****
Waterway Paper Prod. Co	14,000	*****	*****	******	*****
West End Paper Co	13,000				
West Tacoma Newsprint Co	05.000		17,000	23,000	25,000
Wisconsin River Paper & Pulp Co	25,000	020 000	000 000	2 0 42 000	1 150 000
TOTAL	1,739,000	820,000	899,000	1,042,000	1,150,000

^{*} Former St. Regis mill at Norfolk, N. Y.

FACTS AND FIGURES ON NEWSPAPERS

Here is some pertinent background on the May 1952 increase of \$10 a ton in newsprint price, bringing it to \$126 in New York (U. S. currency).

The Canadian newsprint companies, which now produce some 80% of the newsprint supply for the U.S. mills, declared their labor and equipment costs

have continued to rise, and that when the Canadian dollar was devalued, the loss in dollars in U.S. sales was so substantial as

to make the increase mandatory.

D. W. Ambdidge, president of Abitibi Power & Paper Co., Toronto, gave a concrete example when he said that on July 1, 1951, his company was getting \$123.40



... NOT SPECULATION

when you specify PERKINS Rolls. PERKINS Rolls have behind them the longest and broadest experience in the Roll-making industry. B. F. PERKINS & SON, inc.

Engineers and Manufacturers HOLYOKE • MASS.

LARGEST MANUFACTURERS OF CALENDER ROLLS IN THE WORLD

164

PULP & PAPER

1952 Review Number

Canadian funds in New York for a ton of newsprint, but on April 4, 1952, it received only \$113.39, although the price of newsprint in New York in U.S. funds was the same (\$116) on both dates.

The last newsprint price increase also of \$10, was put into effect July 1, 1951.

In Great Britain, the price of newsprint is under control and fixed at \$188, as of May 19, 1952. It comes from Scandinavia and Canada. Newspapers in Britain have been limited for a few pages, but some relief has been permitted.

Early in this century most newsprint for U.S. papers was made in U.S., but the newspapers succeeded in preventing any protective tariff for newsprint, as was accorded other U.S. major manufactures, and the result was the flight of the industry to Canada, which is depicted in another table in this section.

Pertinent background to the discussions of newsprint prices and the supplies for U. S. newspapers are these additional facts:

U. S. newspapers of 100,000 circulation or more average 113 pages for Sunday issues and 36 pages for week-day issues (1951 figures).

Sunday papers were larger than ever before in 1951—averaging 29 pages more than in 1946 and two pages more than in 1926.

Week-day papers were 9 pages larger than in 1946 and 2 pages more than in 1949.

Total week-day daily circulations (English-language papers) in the U.S. for the year ending Sept. 30, 1951, was 54,-018 copies. For Sunday papers, 46,279,000 copies. This was an overall increase of 0.2% over 1950. On the Pacific Coast, 10 cents per copy papers appeared, others went up to 7 cents.

The Sunday circulation had jumped 50% above the 1936-1940 pre-war period average. Weekly circulations boomed upward over 30%.

Per capita consumption of newsprint in the United States has been running in recent years at 77-79 pounds per person! In comparison with the rest of the world, this is a fantastically high figure.

Advertising

Expenditures for advertising in the U.S. in 1951 climbed to an all-time peak. On the basis of preliminary data compiled by the Central Research Department of McCann-Erickson and published in Printers' Ink the dollar volume thereof increased by 15% over the hitherto 1950 high. It is estimated that 1951 expenditures via all media amounted to \$6,548,-000,000 or an increase of approximately \$850,000,000 over the preceding year. Newspapers with 34% of the 1951 total remained the dominant medium in the field of advertising although their relative importance was somewhat lower than in the preceding year when they had 36%. Over-all national advertising was 16% above the 1950 totals and all media with the exception of newspapers, recorded increases in this classification.

As reported by Media Records, newspapers in 52 major cities of the U.S. carried a record high total of 2,478,463,000 agate lines of advertising in 1951. The increase of 38,313,000 lines over 1950 was 116%.

What about newspapers competition?

Radio networks claim 105 million radio receivers were in use in the U.S. at the end of 1951, an increase of 9 million over 1950. Radio advertising for 11 months was \$160,000,000—a slight drop. It was estimated 15,750,000 television sets were in use Jan. 1, 1952, a big 50% increase over the year before, with many areas still undeveloped.

Magazine advertising gains were impressive. Revenues were 12% to \$457,500,000. Total lineage gain was 5% over 1950. It has been a steady gain, and suffered no reversal as did newspapers in the first 1951 quarter. The news magazines, particularly, have been cutting in newspaper business, observers state.

CANADIAN NEWSPRINT CAPACITY

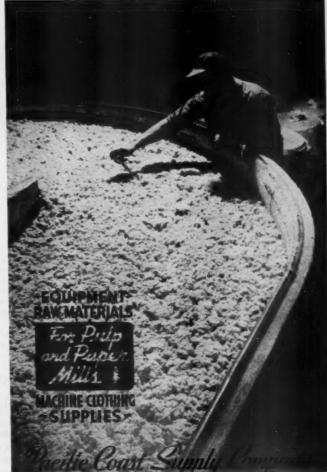
In thousands of short tons Rated Idle Operat-Capacity Capacity 1.715 193 1.096 69.6 1.163 1935 3.914 4.368 949 78.3 4,301 1945 101.1 4.350 1948 1949 1950 5,113 5,227 101.2 mil 100.9 100.7 1051 5.360 nil 102.6 1952

Source: Newsprint Association of Canada; 1949-1950 NAC estimates from company reports; including Newfoundland, beginning in 1949.

'Estimate by Newsprint Association of Canada.

Canadian Newprint Facts

Newsprint is Canada's most important manufacturing industry. Canada now produces more newsprint than all the



SAN FRANCISCO . PORTLAND





with Canada!

S Canada grows so too do its packaging needs . . . which are being filled to a greater and greater degree each year by the products of this steadily expanding company.

In the field of packaging, Bathurst Power and Paper Company Limited holds a position

of prime importance.

Through its subsidiaries (Kraft Containers Ltd., Hamilton, Ont. and Shipping Containers, Ltd., Montreal, P.Q.) it supplies kraft corrugated shipping cases in a wide variety of types and styles to manufacturers and shippers from coast to coast.

The company's mill at Bathurst, N.B. produces kraft liner and B.C.M. corrugating board for the shipping case industry in general -folding and set-up box-board for the paperboard carton industry-and unbleached sulphite pulp for manufacturers of paper and paperboard.

In the packaging industry there are thousands of uses for Bathurst products. Rememberwhenever you see a kraft shipping case or a paperboard carton-there's a good chance it had its origin in the timber limits of Bathurst!

BATHURST POWER & PAPER COMPANY LIMITED, BATHURST, N.B. AND SUBSIDIARY COMPANIES: KRAFT CONTAINERS, LIMITED, HAMILTON, ONT. AND SHIPPING CONTAINERS, LIMITED, MONTREAL, P.Q.

\$1-1-5

other countries of the world combined, and it is estimated that production this year in Canada will exceed 5.690.000 tons.

There are 28 companies in Canada producing newsprint. They operate 38 newsprint mills, ranging in capacity from 10,000 tons to 350,000 tons a year. Quebec is the No. 1 newsprint province, accounting for about 52% of Canada's production. With Ontario it accounts for about 75% But British Columbia's percentage, with one new mill to be completed this year and another planned, is rising.

WORLD NEWSPRINT PRODUCTION

	(In Short	Tons)	
Country	Average 1935-39	1951	1952°
Canada	3,336,786	5,525,000	5,690,000
U.S.A	907,804	1.095,000	1,120,000
Argentina	0	1,000	35,000
Brazil	4.000	30,000	30,000
Chile	4.350	13,500	14,000
Peru	n.a.	4,000	4,000
Britain	961,800	595,000	645,000
Finland	436,125	452,000	460,000
Norway	205,500	175,000	168,000
Sweden	299,015	362,000	358,000
Austria	70,550	83,000	100,000
Belgium	51,820	66,000	68,000
Denmark	1,800	2,000	2,000
France	360,600	355,000	355,000
German Rep.	166,000	187,000	215,000
Holland	99,285	108,000	110,000
Portugal	00,200	2,525	2,500
Switz	34,500	55,000	55,000
Italy	74,500	109,000	123,000
Spain	27,600	26,500	27,500
Turkey	21,000	6,500	6,500
Egypt	0	1,000	1,000
Formosa	(Japan)	6.100	8,000
	406,200	200,000	204,000
So. Korea		2.000	2,000
Australia	(Japan)	35.000	50,000
Australia		35,000	50,000
"Free World"	7,448,235	9,497,125	9,853,500
German Sov.	345,690	150,000	150,000
Poland	33,770	60,000	60,000
Russia	221,820	400,000	400,000
Bulgaria	1,650	4.000	4,000
Czechosl	42,800	53,000	53,000
Hungary	5,295	6,000	6,000
Rumania	5,000	4,500	4,500
China	0	20,000	20,000
No. Korea	(Japan)	n.a.	n.a.
Sub-Total	656,025	697,500	697,500
World Total.	8,104,260	10,194,625	10,551,000
		-	

Source: Newsprint Association of Canada.

World-Wide Situation

Figures on World newsprint capacity, production, etc., are shown in this section. Principal features of the overall situation, as summarized by the Newsprint Association of Canada are these:

(a) Total newsprint supply in 1951 is short of demand by about 300,000 tons or, roughly 3 percent, and a slightly smaller shortage is expected in 1952.

(b) In both 1951 and 1952 there appears to be a remarkably close balance between capacity and demand, and consequently, between idle capacity and overall shortage.

(c) Estimated production gains both this year and next are greater than reported increases in demand, so that the immediate overall shortage appears to be diminishing.

Estimated world capacity totals for 1951 and 1952 show continuation of the annual increases during recent years. By the end of 1951 the loss of over a million tons which occurred during the war years will have been made up and 1952 capacity appears to be about 300,000 tons more than prewar.

WORLD NEWSPRINT CAPACITY, PRODUCTION, DEMAND, SUPPLY

(In thousands of short tons)

	Prewar	1949	1952 (est.)
Capacity	10,578	10,078	10,825
Production	8.149	9.195	10,551
Demand	8,148	9,476	10,833
Shortage	nil nil	196	276

Source: Newsprint Association of Canada.

Fowler Expresses Concern over Newsprint

The present pattern of newsprint distribution in the world is a matter for grave concern, in the opinion of Robert M. Fowler, president of the Canadian Pulp and Paper Association.

While admitting that the newspapers on this continent have traditionally been larger than those in other countries, Mr. Fowler states that a solution for shortages abroad is highly desirable and in some cases essential.

"An adequate public information service for allies overseas is perhaps as important to the common cause as the shipment of tanks and planes," declared Mr. Fowler.

Man uses paper more than any other commodity except water. You are in an indispensable industry.



^{*} Estimated n.a.-not available.



with the help of Titanox Pigments

Ever-increasing mailing costs continue to expand the demand for lighter weight paper.

Pigmentation with Titanox makes possible the manufacture of these lighter papers without increase in show-through or loss of brightness and opacity. Both TITANOX-AWD, the water dispersible titanium dioxide, and TITANOX-RCHT, the rutile-calcium pigment, produce this desired result—either added directly to the beater or used in the coating.

Results of our many years of research in the TiO₂ pigmentation of light-weight paper may be of help to you. Ask your Titanox representative or write Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

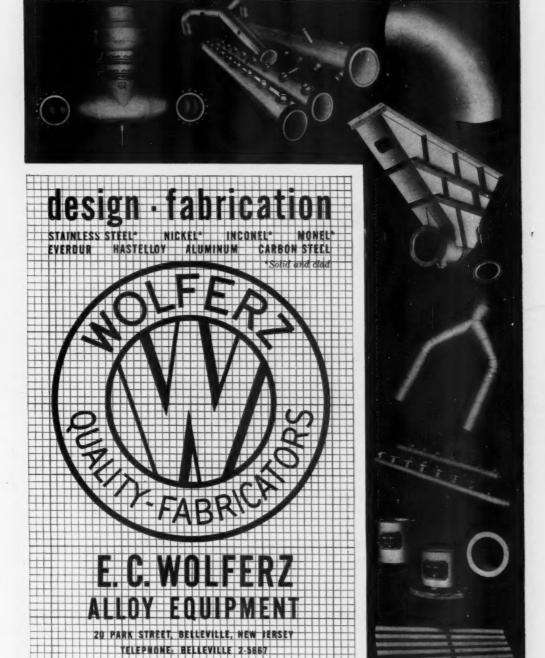
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the brightest name in pigments

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TITANIUM PIGMENT CORPORATION



Subsidiary of NATIONAL LEAD COMPANY



Southern Representative
W. W. HENDERSON & SONS
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PRICE & PIERCE

LIMITED

WOOD PULP AGENTS

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LONDON

MONTREAL

60 EAST 42nd STREET

27 CLEMENTS LANE E.C. 4

1058 SUN LIFE BUILDING



MARATHON

High Quality

BLEACHED SULPHATE WOODPULP



Manufactured by

MARATHON PAPER MILLS of CANADA, LTD.

MARATHON, ONTARIO



Sales Agent

MARATHON CORPORATION

Rothschild, Wisconsin

CANADA - Review Continued

(Continued from Page 59)

Kootenay Forest Products is headed by W. M. Leuthold of Spokane, Wash., who has directed the operations of Glacier Lumber Co. at Nelson, B.C., which controls some 40,000 acres of timber land. Kootenay Forest Products has been seeking a license covering 400,000 acres which would be merged with Glacier Lumber Co.'s for the use of the protected pulp mill to cost about \$20,000,000 and produce about 200 tons daily of an unspecified grade. Actual construction of the pulp mill might be affected to some extent by the larger Celgar program at Castlegar, which is within 25 miles of Nelson.

Most important new mill actually starting up in 1952 in British Columbia is Elk Falls Co.'s newsprint operation near the mouth of Vancouver Island's Campbell River at Duncan Bay. This represents an overall investment of about \$40,000,000 and a partnership of Pacific Mills Ltd., Crown Zellerbach Corp. affiliate, and Canadian Western Lumber Co. Initial capacity is 240 tons daily, and it is planned to make this an integrated operation eventually, with additional mills producing bleached kraft or dissolving pulp.

PULPWOOD PRODUCTION IN CANADA BY PROVINCES

	1950	1951°
Ouebec:		
Cords	6,340,220	6,510,000
Value	\$142,370,309	\$150,000,000
Ontario:		
Cords	3.196,941	3,230,000
Value		\$74,102,000
British Columbia:		
Cords	928,650	1,110,220
Value	\$23,182,324	\$28,131,000
Other provinces:		
Cords	2,407,665	2,518,000
Value	\$48,765,863	\$50,601,000
All Canada:		
Cords	12,873,476	13,368,000
Value	\$285,762,620	\$302,834,000

[°] Estimate by PULP & PAPER.

EASTERN CANADIAN PULPWOOD PRODUCTION

(East of Rockies, including Newfoundland)

Wood-Yea	r													Cords
1939-40.														6.350.000
1946-47.		٠												9.324.000
1947-48.					٠									11,162,000
1948-49.														8,840,000
1949-50.			٠											11.850.25
1950-51.							,		٠		٠			12,873,470
1951-52°														13,000,000

^{*} Estimated Source: Canadian Pulp and Paper Association.

The paper machine is being supplied by Dominion Engineering Co.

An interesting possibility in 1952 was establishment of a pulp mill at Kitimat, site of Aluminum Co. of Canada's \$550,-000,000 smelter-power enterprise. This company is co-operating with Powell River Co. in making a survey. A mill would utilize the extensive timber in the Kitimat and adjacent valleys south of the territory now being developed by Columbia Cellulose Co. (Celanese) and the surplus power resulting from Aluminum Co.'s hydro-electric project.

Pacific Mills at Ocean Falls, having completed its big new wood-handling plant in 1951, is now concentrating on installation of its 75 ton Babcock & Wilcox chemical recovery unit to operate with its 120 ton B & W-Tomlinson recovery unit which was put in a few years ago.

One of the notable events of the past year was the merger of H. R. MacMillan Export Co. and Bloedel, Stewart & Welch, resulting in the formation of MacMillan & Bloedel with assets of more than \$110,000,000 and ranking among the world's biggest pulp-lumber enterprises. This company is increasing capacity of its Harmac bleached sulfate mill to 570 tons at a cost of \$18,000,000 to make it the big-

MILL LOCATIONS

	Pulp Mills	Pulp & Paper Mills	Paper Mills	Total
Newfoundland	1	2		3
Nova Scotia	2	2		4
New Brunswick	4	3		7
Ouebec	12	32	10	54
Ontario	9	18	17	44
Manitoba		2		2
British Columbia	6	4		10
Canada	34	63	26	194

Note: There are three mills in Newfoundland Source: Dominion Bureau of Statistics

CANADA'S PULP EXPORTS

	Tons	Value
1951	 2,300,000°	\$225,000,000**
1950	 1,846,143	208,555,549
1949	 1.546,198	170,675,310
1948	 1.796,998	211,564,384
1947	 1,698,712	177,802,612
1942	 1.510.727	95,266,873
1937	 870,711	41.815.731
1932	 452,292	18,930,065
1926	 1.003.081	52,077,122
1921	 527,222	33,133,675

Source: Canadian Dominion Bureau of Statistics.

CANADIAN PULP AND PAPER PAYROLL DATA

	Total Employes	Employes On Salary	Average Salary	Employes On Wages	Average *Wage	Total Salaries- Wages
1920	31,298	2,669	\$2,449	28,629	\$1.352	\$ 45,253,893
1939	31,016	4,382	82,482	26,634	\$1,271	\$ 44,737,739
1943	37,020	5,384	\$2,723	31.636	\$1.787	\$ 71,199,422
1947	49,946	7,706	\$3,411	42,240	\$2,443	\$129,477,995
1950	52,343	8,578	\$4,163	43,765	\$3,051	\$169,246,531
1951**	53,000	8,700	\$4,200	44,300	\$3,100	\$175,000,000

^{*}Woods labor not included.

**Estimate by PULP & PAPER.

Source: Dominion Bureau of Statistics.

West. Six new Dominion Bridge digesters and two John Inglis digesters are being installed, and Combustion Engineering is putting in two additional boilers. This company's other sulfate mill is at Port Alberni, and it is expected that this mill will soon be increased in capacity and possibly provided with bleaching. However, bleaching may be confined to Harmac.

Powell River Co. has been stepping up.

gest single producer of that grade in the

Powell River Co. has been stepping up production all along the line, and is now engaged in a \$15,000,000 program designed to increase newsprint capacity by 40,000 tons a year, and make the mill the world's biggest individual producer of that type of paper. The present program is an extension of the earlier \$25,000,000 postwar expansion. A new wharf, a 42-inch Hansel whole-log hydraulic barker, three new Waterous grinders, and Babcock & Wilcox boiler house additions are underway.

Alaska Pine & Cellulose Ltd. has passed its first full year following the alliance of Abitibi Power & Paper and Alaska Pine Co. to take over B.C. Pulp & Paper mills at Woodfibre and Port Alice. Main concern is the \$6,000,000 modernization at the latter point, where Canadian Sumner Iron Works is installing a log barker and chipper, Combustion Engineering a high pressure steam boiler, and a modern bleach plant is also being set up.

Howe Sound Pulp Co., controlled by Canadian Forest Products, Ltd., which is operating the mill at Port Mellon formerly owned by Sorg Pulp Co., was spending \$6,000,000 on modernization and improvement.

Alberta Projects

Alberta's pulp mills, long the subject of rumor and speculation and premature announcement, seem closer to reality this year, and this was partly due to the general industrial boom in that province sparked by the oil industry's giant strides.

One of the projects was that of International Resources, Ltd., a \$13,000,000 enterprise headed by Richard Randle and Herman Simpson, of Seattle, who have obtained a reserve of 2,000 square miles of forest land near Red Deer. According to the agreement with the Alberta government, construction must be started by July, 1953, and while the mill may produce pulp for export outside the province during its first ten years of operation it must make provision for further processing afterwards. This development will probably lead to winding up the Alberta Pulp Mills, headed by Melvin Hough.

Beverly Pulp & Paper Co. is R. O. Sweezey's Edmonton Pulp & Paper Mills under a new name. Mr. Sweezey, the Montreal promoter, who has been working on an Alberta pulp and paper scheme since the war's end, must start construction this year or his deal with the Alberta government will have to be modified.

Then there is the \$10,000,000 pulp venture announced last summer by Northwest Pacific Coal & Oil Co., Toronto, but

[°] Canadian Pulp and Paper Association.
° Estimated by Pulp & Paper.

few details have been given out concerning this Alberta company.

Quebec and Ontario Mills Improve

The unprecedented expansion era which gave Ontario top billing in Canada's pulp mill show for several years following the war ended as British Columbia became the pace-setter for the industry, but while new construction has been of a minor nature most companies have improved their mills.

One interesting development has been the entry of Brompton Pulp & Paper Co.'s Red Rock mill into the newsprint ranks. E. & B. Cowan of Montreal have been consulting engineers on this \$22,-000,000 job, which will result in giving the Red Rock mill a capacity of 60,000 tons of newsprint annually as well as 485 tons of paperboard products. Additional digester capacity, increased evaporating and washing facilities and conversion of a container board machine into newsprint production have been the major works this year, and a 55 ton semi-chemical plant using hardwood and four supergrinders are being installed.

Dryden Paper Co.'s major concern has been stepping up its sulfate pulp capacity from 60,000 tons to 80,000 tons. The program under way at Dryden will cost about \$3,500,000. New recovery and evaporator plant are included.

Howard Smith Paper Mills, one of the most diversified producers in the Canadian industry, has been modernizing its various mills. The present phase—a twoyear schedule-represents an expenditure of roughly \$21,000,000, of which about \$8,500,000 has been allocated for extensive changes in the Crabtree Mills, located in Quebec. When this work has been completed, the sulfate mill will have a capacity of about 40,000 tons a year. Modernization of the Cornwall mill has been going on for the past two years and is now completed. A new paper machine, supplied by Dominion Engineering Co. and Canadian Vickers, associated with Sandy Hill Iron & Brass Works, is a feature; its trim is 144 inches.

At Howard Smith's mill at Merriton, production of glassine is being stepped up about 5000 tons, and its Ville la Salle byproduct, Arborite (plastic) is being doubled

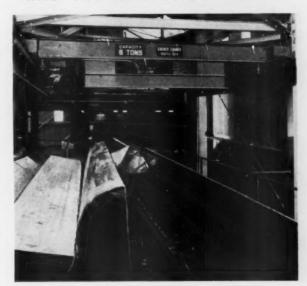
Most notable development at Great Lakes Paper Co.'s Fort William mill has been installation of a Deculator, supplied by Rotareaed of Canada for No. 2 machine.

The KVP Co's mill at Espanola took a long step towards fuller integration when it started producing parchment. A Pusey & Jones machine is turning out the parchment paper. A Whiting Corp. acid evaporator, first of its type in Canada, is serving this operation.

Abitibi Power & Paper Co.'s subsidiary Provincial Paper Co., which operates a paper mill at Milles Roches, a coating mill



THAT'S WHAT THIS CANTING CRANE WAS "JOB-ENGINEERED" FOR ...



Freeing logs and cants jammed in a pulp plant chipper or conveyor can be a time-consuming chore. With this special canting crane, "job-engineered" for its work, it's a matter of merely minutes to do the job.

This crane is typical of out-ofthe-ordinary job requirements in

the pulp and paper industry for which EDERER engineers and builds special cranes...roll handling and roll storage cranes, heavy duty standby cranes, cranes requir-

> EXPORT DIVISION: 301 Clay Street San Francisco 11, Calif.

ing extremely low head room and extra high lift cranes.

EDERER has "job-engineered" cranes for the nation's leading pulp and paper plants... and an EDERER engineer will be glad to discuss your special job requirements. Delivery? When do you need it?



198052

EDERER ENGINEERING COMPANY . 2931 First Ave. So. . Seattle 4, Wash.

Jorrowed a bearing after hours!

Another example of what we mean by

"BETTER BEARING SERVICE"

A hurry-up long-distance phone call after hours...one of our Oregon plywood mill customers needed a bearing replacement right away. He'd already shut down one shift. How quickly could we get the replacement to him?

We were temporarily out of stock of this particular bearing. A search of our records showed we had supplied a spare to a local customer. A phone call . . . a quick trip to our local customer's plant . . . an obliging storekeeper opened the tool room and loaned us the bearing.

We flew the replacement—by our own plane—to the Oregon plant—and saved shutting down another shift. That's "Better Bearing Service"—as near as your telephone.

BEARING MAINTENANCE REPORT—a regularly published, handy reference source for bearing information...a note on your letterhead will bring it to you. Won't you let us send it to you?

BEARING SALES & SERVICE, Inc.

SEATTLE: 2908 Sixth Avenue South TACOMA: 1718 Pacific Avenue PORTLAND: 1645 N.W. Hoyt Street EUGENE: 225 Seventh West ROSEBURG: 117 South Stevens Street at Georgetown and chemical pulp and paper mills at Port Arthur, has been making material changes at all its operations in the interests of modernization and higher efficiency and most of the investment this year is going into its Thorold mill with a view to doubling the number of its paper machines and trebling of book, writing and other paper output. The company is also building Canada's largest waste-paper utilization plants there. It will have a new Foster-Wheeler boiler capable of delivering 75,000 pounds per hour at 250 pounds pressure.

Ontario & Minnesota Paper Co., with mills at Kenora and Fort Frances, installed a new wood preparation building at the latter point and a new barking drum and six magazine grinders in the former to increase the output of ground-wood pulp. Major projects scheduled for 1952-54 include modernization of two paper machines, installation of new groundwood facilities, replacement of water wheels and hydro improvements, all at Fort Frances. Ventilation system for the new woodroom was supplied by Ross Engineering Co.

In Quebec, owing to government policy, no new mills have been under consideration, but it was considered likely that the Chicoutimi mill formerly operated by Quebec Pulp & Paper Corp. and recently in the hands of the government would be turned over to the newly formed Saguenay Pulp & Paper Corp., backed by the New York firm of Standard Ore & Alloy Corp.

At LaTuque, Brown Corp. continued to build up its sulfate mill with a further expenditure of \$3,000,000 to provide, among other things, two Dominion Bridge Co. digesters, Link-Belt chip elevators, and three lines of Sherbrooke (Impco) washers and knotters.

Brompton Pulp & Paper's East Angus mill is also being enlarged through addition of three Dominion Bridge digesters, four Morden Stock-Makers and other facilities.

Price Bros. & Co. has installed additional barking drums at its Riverbend mill, where there has been a general rearrangement of the woodroom. Considerable experimental work has been done at the company's mills in the use of the Curlator to improve stock quality, and these machines are doing a much more efficient job than when they were first pioneered by Price Bros.

Improvements at Quebec North Shore Paper Co.'s newsprint mill at Baie Comeau consisted chiefly of machine speed-up through re-design of headbox.

New Brunswick-Newfoundland

Highlighting developments in New Brunswick has been the complete rebuilding of the 50-year old sulfite pulp mill at the Reversing Falls on the St. John River by Irving Pulp & Paper



TIMICEN

HYATT

NEW

DEPARTURE

SKF

RBC

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JOHNSON

BRONZE

ARROWHEAD

"O" RINGS

NATIONAL

OIL SEALS

Ltd., successors to St. John Sulfite Ltd. The project has been under the direction of Ebasco Services, Inc., New York, with A.P. Schnyder as consulting engineer. The new mill will have capacity of 200 tons of sulfite and 250 tons of sulfate pulp, both bleached.

In Canada's new province, Newfound-Bowater's is proceeding with \$4,000,000 expansion designed to increase newsprint production. A new chlorination building is planned, and the boiler plant is being enlarged. At Anglo-Newfound-land Development Co.'s mill, rehabilitation and speed-up of paper machines has been continuing.

Canadian Labor Statistics Average Wage Rates

(Department of Labor, Ottawa)

(Department of Labor, Ottawa)

Pulp—Acid makers, \$1.34 per hour; blow pit men, \$1.10; chippermen, \$1.08; digester, cook, \$1.47; grindermen, \$1.108; digester, cook, \$1.47; grindermen, \$1.108; digester, cook, \$1.47; grindermen, \$1.108; screenman, \$1.12; screenman, \$1.12; screenman, \$1.12; screenman, \$1.12; man, pond man, conveyer man, sorter, loader, etc.), \$1.04.

Newsprint—Backtender, \$2.05. beatermen, \$1.08; fifth hand, \$1.25; fourth hand, \$1.33; machine oiler, \$1.21; machine tender, \$2.24; roll finisher, \$1.10; hird hand, \$1.08.

Paper Other than Newsprint—Backtenders, \$1.33; beaterman, \$1.05%; finisher, \$1.06; machine tender, \$1.53; third hand, \$1.18.

Maintenance—Electrician, \$1.38; laborer, \$1.02; machinist, \$1.37; millwright, \$1.36; pipe-fitter, \$1.36; stationary foreman, \$1.19.

Paper boxes and containers—Adjuster, \$1.18; bundler (packer, tier) male, 96 cents; bundler, female, 63 cents; corrugating knife operator, \$1.15; corrugating machine feeder, male, \$5 cents; same, female, 74 cents; glue table worker, female, 64 cents; laborer, 83 cents; machinist, \$1.23; mechanic, \$1.23; pressman, \$1.38; scorer, \$1.00; stayer operator, 63 cents; stitcher operator, male, 94 cents; same, female, 76 cents; wrapping machine operator, set-up boxes, female, 62 cents.

The above are from the last published report of the Canadian labor department showing the

male, 52 cents.

The above are from the last published report of the Canadian labor department showing the wage scale for the industry in all provinces. There have been increases since then, but the figures given are an indication of the overall rates, the amount quoted in all cases represent-

ngures given are an indication or the overail rates, the amount quoted in all cases representing the average for all Canada.

In practically every instance, the wage rates in British Columbia are higher than in any other province. Some of the prevailing rates in British Columbia in 1951: Woodroom, \$1.18 to \$1.46; acid plant, \$1.53 to \$1.64; digester room, \$1.24 to \$1.66; and bleached screen room, \$1.18 to \$1.26; machine room, \$1.22 to \$1.76; machine shop, \$1.22 to \$1.71; pipe shop, \$1.22 to \$1.76; machine shop, \$1.22 to \$1.71; pipe shop, \$1.22 to \$1.76; panit shop, \$1.22 to \$1.66; electrical shop, \$1.22 to \$1.61; bricklayers, \$1.22 to \$1.61; bil gang, \$1.18 to \$1.52; laboratory, \$1.24 to \$1.35, Janitors, cooks, truck drivers, etc., \$1.18 to \$1.52.

Canadian Rayon and Staple Fibers

In 1951, Canada's synthetic fiber and yarn supply reached an all-time peak of 71.4 million pounds, compared with 62.7 million pounds the previous year.

Including domestic production and imports, the supply of staple fiber greatly

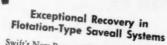


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exceeded that of the previous year, totalling 35.3 million pounds, compared with 24.9 million pounds in 1950. Supply of filament yarns declined from 37.7 million pounds to 36.1 million pounds.

There was a substantial increase in production of acetate staple fiber by Canadian Celanese Ltd.

Output of nylon fiber last year, all sold to domestic spinners, totalled 1.7 million pounds, compared with 1.5 million pounds

in 1950

Companies now expanding are Courtaulds (Canada) Ltd. at Cornwall, Ont., Canadian Celanese and Canadian Industries Ltd. at Kingston, Ont. Before the end of 1952 it is expected that Canadian Chemical Co., a Celanese Corp. of America subsidiary, will be producing acetate staple fiber and acetate filament yarn at Edmonton, Alta., using woodpulp from Columbia Cellulose (Celanese subsidiary) in B.C.

Canadian Staple Fiber **Production and Imports**

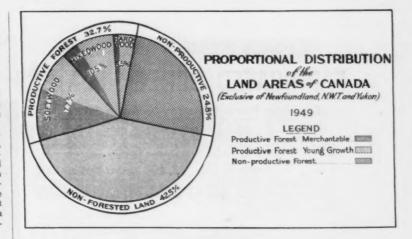
(in thous	ands of	pounds)	
Do-	Do-	Do-	
	mestic		
	Acetate		
Deliv-	Produc-	Produc-	

	eries	tion	tion	Imports	Total
1939	-	- min	_	2,701	2,701
1946	-	750	-	9,565	10,315
1949	2,084	2,050	1,000	11,131	16,265
1950	11,866	4,200	1,500	7,409	24,975
1951	10,220	4.600	1.750	18,736	35,306

Source: Canadian Textile Journal.



See Page 3 for conversion factors to help you in using this WORLD RE-VIEW: How to transpose Metric Tons to Short Tons and vice versa; Cords to Meters, etc.



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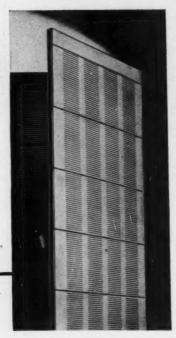
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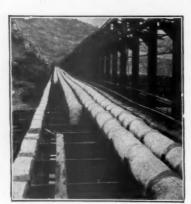
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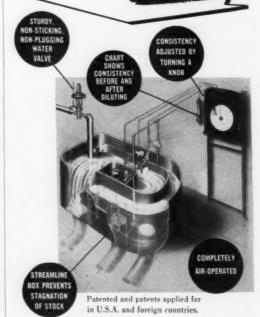
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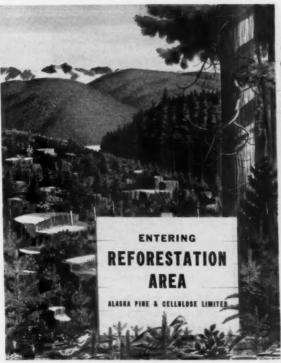
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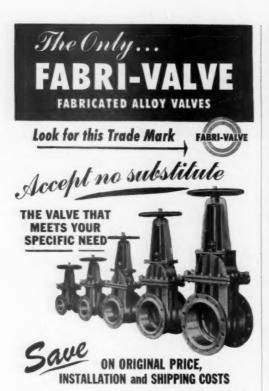
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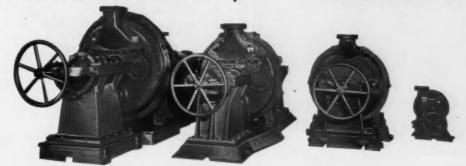
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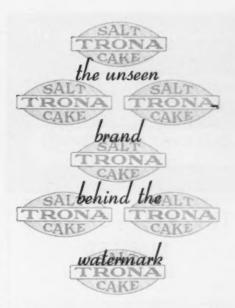
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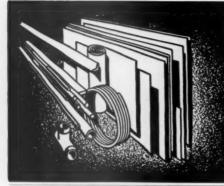
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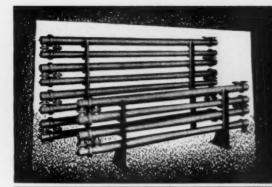
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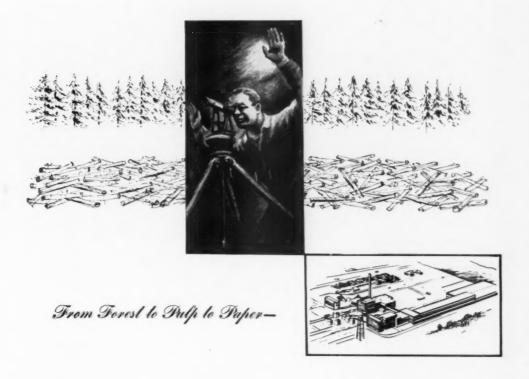
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The Engineer plans for your progress and preparedness

During the last three decades, the Southern Pine and the South's abundant hardwood have

become much more than sources of turpentine and lumber. During that time they have invaded homes and factories throughout the country in the form of kraft paper, newsprint, protective packing, tissue and many other products for daily living. These changes, brought about by pioneering management and the Engineer are still going on. From forest planning and control through the intricacies of pulp and paper to the problems of personnel and markets, the Engineer brings together the many elements that help these age-old products of nature serve man's progress and preparedness in many new ways.

A DEPARTMENTALIZED ENGINEERING ORGANIZATION SERVING WORLD-WIDE INDUSTRY



Engineers for 50 years...J. E. SIRRINE COMPANY



One of the Men behind Eastwood Wires Charles Worzel

-A "Weigh" to Better Wires Responsible for weighing up metals for our melting furnances, Charles wires, and of copper and zinc that wordenders the fine quality of confirming with the confirming

One of the Women Behind Eastwood Wires

Muriel Abrash

Operates on a "Small Scale"

On an over-all basis, we operate on a large scale, considering that we large scale, considering that we

determining the correct analysis of alloys for every type of warp and

Here in the laboratory is the heart



One of the Men Behind Eastwood Wires Chester Mankiewicz

Here we show a fise-wire drawing machine being threaded or "strong up." The finished sizes are going through their final drawing in special Jubricant and coolant, then onto appoint for

What began at 2,200 foot length



One of the Men behind Eastwood Wires

James Dorney

Whose work is always "on the beam" work is always on the wine. After this back beam is filled as a time. After this back beam is filled, each warp wire many beam is filled, each warp wire many the many of the loom, where the



Two of the Men behind Eastwood Wires

Michael Finn and Charles Zindel, Jr. Teaching and Learning the Art of Weaving



One of the Men behind Eastwood Wires

Robert Zimmerman



and Clarence Reed

TEAM UP FOR THE "BIG STRETCH"

Here is a fourdrinier wire greting its final conditioning on the "streeching table". Only molten meal, courtifugally cast, weeks ago in our foundry, the many and warried skills in our foundry, the many and warried skills in our foundry. our foundry, the many and varied skills in our large, complexely integrated plant have trans-formed the alloys into a unify-woven wire that will enable some fine mill to maintain in reputation for top-quality paper.





EASTWOOD - NEALLEY CORPORATION . Belleville, N. J.

THE MEN **BEHIND** YOUR **FOURDRINIER** WIRE We know them well-We call them by their first names We know their skills We share the same ideals, the same pride in producing the best wires that good men and good machines

make possible

